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VOLUME X.

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ERNESTI, JOHN AUGUSTUS, was born at Tennstadt, in the Thüringer Wald, on the 4th August, 1707. He was educated at Wittemberg and Leipzig, and became connecter of the school of St. Thomas, in the latter city, in the year 1731. He succeeded J. M. Gesner as rector in 1734. While engaged in this situation he acquired a great reputation as a classical scholar; so much so, that in 1742 the University of Leipzig delegated its own rule of never electing to any professorship the master of a school, and appointed him professor extraordinary of ancient literature. He was made professor of eloquence in 1756, and professor of theology, with the degree of Dr., in 1758: he held the two last named professorships together till 1770, when he gave up the former to his nephew, Augustus William. He died on the 11th September, 1781. Ernesti was a man of considerable abilities, and especially of a very methodical mind, to which are due the great improvements in the system of teaching introduced by him, and still, to a certain extent, adopted in the German universities. He was well acquainted with the classics, and no mean proficient in theological learning. His Latin style is very elegant for a German, little inferior indeed to that of Ruhnken, and fully equal to that of Wyttenbach: a good specimen of his Latinity may be seen in A. Matthii's Elloquentia Latina. His knowledge of Greek, though less accurate, was still very respectable. The work for which he is best known is his edition of Cicero, which, besides the alterations which he made the basis of all subsequent ones. The third and last edition of this author published by him was printed at Halle in 1775. His Clavis Ciceroniana, or Index of words and subjects to Cicero's works, is still in general use. Besides his Cicero, Ernesti's Initia Doctrinæ Solitudinis et Instituto Interpretis Noti Testamenti are much esteemed by students at the present day; the latter has been recently translated into English. The edition of Homer which Ernesti published in 1749-55 is merely an improved reprint of the hackneyed edition by Dr. Clark. It was republished by Dindorf in 1824. His edition of Callimachus, which appeared in 1761, is suspected to have owed a good deal of what is valuable in it to the contributions of Ruhnken. An account of it is given in the 'Museum Criticum,' vol. ii., p. 191. Ernesti's editions of Polybius, Tacitus, and Suetonius, have been quite superseded by those of Schweighäuser, Beikker, and F. A. Wolf.

ERNESTI, AUGUSTUS WILLIAM, nephew of the preceding, was born at Frohndorf, near Tennstadt, the 26th November, 1733. He was a pupil of his uncle at Leipzig, was made professor of philosophy there in 1756, and, as has been mentioned, succeed, on his uncle's resignation, to the professorship of eloquence (in 1770). He died of apoplexy on the 29th July, 1801. He was principally distinguished as a very good Latin scholar. His best known work is an edition of Livy, with a very copious glossary, which was reprinted twice in his lifetime; the third edition was in the press when he died, and was completed by Schiller.

ERNESTI, JOHN CHRISTIAN THEOPHILUS, also a nephew of John Augustus, was born at Arnstadt, in the Thüringer Wald, in 1756. He was professor of philosophy in the University of Leipzig from 1785 to 1801, when he succeeded his cousin, Augustus William, as professor of eloquence. He died on the 5th June in the following year. This scholar published editions of Silius Italicus and Assop; Lexicon Technologic Graecæ et Lat. Rhetorices, Lips. 1795; Lex. Techn. Romanae Rhetorices, Lips., 1797 (both very useful works); Herophilus Glossæ Sacrae, 1785; Suidae et Phaenornini Glossæ Superi, 1786; a translation into German of Du-mesnil's Latin Synonyma, and a German version of the principal works of Cicero. (Cicero's Geist und Kern, 1799-1802.)

EREPNIUS. The celebrated orientalist, Thomas Erpenius, or Thomas van Erpen, was born at Gorcum, on the 7th of September, 1584. At the age of ten years he was sent to Leyden, where he received his education; and in 1608 he took the degree of Master of Arts in the university of that town. He had studied chiefly theology and oriental literature, and after the termination of his academic education, he undertook a tour to England, France, Italy, and Germany, for the farther prosecution of his favourite pursuits. At Paris he became acquainted with Isaac Casaubon, and availed himself of the Arabic instructions of a learned Maronite, Joseph Barbatus, then a resident in the French capital. Erpenius returned to his native country in 1612, and was in the following year appointed professor of Oriental languages in the university of Leyden, an office to which was added subsequently that of Arabic interpreter to the Netherlands. On two occasions, in 1620 and 1621, he was sent to Paris on business of the university of Leyden. With these interruptions he seems to have devoted himself exclusively to the cultivation of Oriental literature. He established an Arabic press at his own house, and employed himself in editing a number of works, which have been of the greatest utility in promoting the cause of Oriental learning. He died of a contagious disease at the age of forty, November 13th, 1634. The work which has contributed most to give celebrity to the name of Erpenius is his 'Grammatica Arabica, quinque libris methodice explicata,' published at Leyden in 1613, 4to. It has often been reprinted with additions and alterations, and has become the foundation of nearly every subsequent Arabic grammar printed in Europe down to that of Silvestre de Sacy. The most remarkable of Erpenius's other publications are the following: 'Proverborum Arabicorum centum duorum,' Leyden, 1614 and 1623, 8vo.; 'Locumnam Sanitatis Fabulae et selecta quodam Arabum Adaegu,' Leyden, 1615, 8vo.; an edition of an Arabic version of the New Testament and of the Pentateuch, the former published in 1616, the latter in 1622; an edition of the chronicle of Eliasmin, with a
Latin translation, published after his death, under the title of 'Historia Saravacca,' Leyden, 1625, fol.; two original treatises on Arabic grammar, bearing the title, 'Grammatica Arabica, dicta Giambat. et Philib. centum Regensunt,' Leyden, 1617, 4to.; and a Hebrew Grammar, 'Grammatica Ebræa generalis,' Leyden, 1621, 8vo.

ERPETON. [Hist.-Geog.]

ERPETON, Lacépède's name for a genus of serpents, placed by Cuvier next to Eryx. The name should be written *Hetropus*.

The genus is furnished with two soft prominences, covered with scales, on the muzzle. The head is protected by large plates; those beneath the belly are not large, and those beneath the tail scarcely differ from the other scales. The tail however is very long and pointed. Cuvier, who speaks of the priority of Lacépède, who first described the genus under the name of *Erpeton*, remarks that Merrem has changed the name to *Rhinitopus*.

ERRATIC BLOCKS are those weather-worn and more or less rounded fragments of the harder rocks which are found very widely scattered over the surface of the earth, and at great distances from the places whence they are supposed to have been derived.

In size they vary from ten thousand cubic feet and upwards to a few inches. M. Brongniart has proposed to designate the several sizes by particular names, as gigantic, meteoric, cephaloid, pugilary, &c. But in England we generally confine the term erratic blocks to the larger masses, calling those of middling size boulders, and arranging the smaller along with gravel: this is, however, too vague. The nature of erratic blocks is not less various than their size. Every species of rock seems to have contributed a portion of its substance towards the mass, though the harder, being better capable of resisting the disintegrating and corroding influence of atmospheric causes, are found in the greatest abundance, such as quartz, petrified, greenstone, granite, porphyry, syenite, gneiss, primitive and transition limestone, sandstone, serpentine, pudding-stones, siliceous sandstones, &c.

The distribution and situation of these blocks are also very different. Sédona isolated, they are generally found in patches or groups, as in the environs of Geneva, the plains of Westphalia, in Sweden, &c.; or in long bands or trains, as in the north of Mecklenburg Sleftz, where they run in a direction west-north-west and east-south-east; or widely spread over considerable tracts, as between Warsaw and Grodno, between St. Petersburgh and Mowrov, in East Prussia, &c. Sometimes they cover horizontal plains, as in the north of Germany; sometimes they rest on the sloping sides of mountains, as in the Alps and the Jura, and occasionally on the very tops of lofty eminences, as on the summits of the colossal mountains of Rettwick, of Veltlin, and of Omund, about 6000 feet above the level of the sea.

Sometimes they are seen in greatest abundance at the bottom of valleys where they open into the plains, and in other instances they are found collected in the largest quantities in the high and narrow parts of the valleys, as is observed at Detmold and east of Leipsig. At times they are so abundant as to be accumulated into hills of a particular form, as is the case in Småland, in Sweden; and sometimes they form even mountains of considerable height, as may be seen near Quelheu, in Norway; and what is remarkable, the larger masses are at the top, the others diminishing gradually towards the bottom.

Though generally superficially disposed, erratic blocks are however in some places found imbedded in a fine sand which has nothing in common with the nature of their origin, as in the plains of Westphalia. Some blocks of the larger order depend either on their own particular nature, or the greater or less friction to which they have been subjected, the length of time they have been exposed to atmospheric influence, or the nature of the soil in which they have lain; their angles and edges are very sharp as though they were just detached from their native mountains, as is the case in the neighbourhood of Groningen.

When the erratic blocks are not at any great distance from the place they were detached, as is the case in Groningen, they are usually found up to their origin. Thus those which are in the basin of the Rhine come from the Grisons; those of the valley of the lake of Zürich and of the Leman have been detached from the mountains of Glarus; those of the basin of the Rhone or Rhône come from the rocks at the outlet of the river; those of the Aur and the Jura from the lofty mountains in the canton of Bern. Even those which cover the widely extended tract from Holland on the west, to St. Petersburg and Tver on the east, are supposed by Von Bisch, Hausmann, &c., to have been detached from the mountains of Scandinavia. It is however remarkable that, contrary to what is generally observed of transported debris, the blocks are frequently largest as they are farthest removed from the place whence they came, diminishing gradually in size as they approach the nearer source. The blocks found in Mecklenberg and Seeland, which are ascertained to be derived from the Scandinavian peninsula, are larger than the blocks of the same rocks in Seania and East Gothland, and they disappear altogether close to the primordial mountains where they were detached.

In certain places the blocks are almost exclusively of a particular kind, while in others they vary greatly in their mineral character, proving, together with the ascertained situation of the same rocks in situ, that they must have been detached from various quarters. This is the case with the erratic blocks of Yorks-hire, and with those of Lithuania, for though the greater part, perhaps, of those in the latter locality may be similar to the rocks in Sweden and Norway, there are many evidently derived from other places.

As for the direction in which the bands of erratic blocks seem to lie, and the quarter whence they seem to have come, they are very various. We have just seen that in the north of Germany and of Bohemia they are directed north-west and east-south-east. Count Rasumowski observes that, when many blocks are accumulated they form parallel lines with a direction from north-east to south-west. Brongniart says they have a general direction north and south. Sir James Hall speaks of those in the neighbourhood of Edinburgh as coming from the west. We have said that those on the north of the Alps come from the south.

If any thing further were necessary to complicate the problem of erratic blocks, it is the immense distance at which they are sometimes found from the nearest rocks of similar composition; thus blocks of granite are found on the mountains of Potosi, while the nearest granite rocks are in Tucuman, about four hundred leagues off. Nor is distance alone; the detached blocks are found separated from their parent rocks by intervening hills, broad and lofty as that of the Aur, and even by straits and seas: thus in the north of Cumberland there are boulders which have been transported across the Solway Frith from Dumfries, and the blocks on the south plains of Germany are separated from their parent rocks by the Bode.

England, as well as the continent of Europe, has many spots covered with erratic rocks, some of which seem to be derived from Norway, while others are evidently the descendants of our own mountains. For these reasons we refer the reader to the observations and works of Selwyn, Conybeare, Lyell, Buckland, Phillips, Hibbert, &c.
Erratic blocks are also common in America and other parts of the world.

For what has already been said, and from the circumstance of erratic blocks lying on some of the most modern formations, it will be easily conceived that they present one of the most inexplicable of geological phenomena. The blocks on the Jura, and from the Alps generally, having a facetted angularity, are supposed to have rolled or been tumbled while they were resting, and then come to rest in their present positions. Hypotheses, the most remarkable of which are the following:—1. De Luc was of opinion that these blocks had been projected into the air by the same force which upheaved the Alps, and then fell on the ground and were tumbled into their present positions, in the same way as a ball rolled along with force rises up a hillock. Others, as Daubuisson, have thought that these blocks, which are almost wholly of transition rocks, were the remains of a mantle of these rocks, of later formation than the limestone of the Jura, and consequently much more recent than is generally admitted, and which, having been destroyed, left nothing but these testimonials of their former existence. 4. Dolomieu supposed that the summits of the Alps were formerly connected with those of the Jura by an indirect route, to which the name of a dike is given in the solution that precipitated the blocks from the summit of the Alps to the plateau, and into the valleys of the Jura. 5. Venturi has attempted to explain the passage of the blocks from the Alps into the basin of the Po, by floating them down the river, and the testimony of the blocks which they suppose to have come formerly on a level with the base of the Alps, and with it the blocks which had rolled down upon this calcareous plain. 6. Finally, Von Buch, extending his general theory to the particular phenomenon, thinks that the disposition of the blocks is the result of an upraising of the Alps posterior to the formation of the tertiary rocks.

M. Brongniart very justly observes that these hypotheses leave many difficulties unexplained: he conceives that as the nature of the beds is very various, it is most presumable that the cause also is general. Certain it is that even if it were possible satisfactorily to assign a cause for the erratic blocks found upon the Jura, the same reasoning would hardly be applicable to other cases; and in the utter impossibility of discovering any single cause competent to the production of such different effects, we must have recourse to the more probable conjecture of M. Larivière, that the dispersion and disposition of erratic blocks have been effected in different ways. The more powerful causes, as the displacement of the earth, the transporting power of torrents and icebergs, in which opinion he is followed by Mr. Lyell and others.

Erratic blocks, like other phenomena, are attended with their peculiar advantages: thus on hot and dry soils, and in cold and moist, sheltering it from the direct rays of the sun in the day, and thus diminishing the evaporation of its moisture. On cold soils they tend to maintain an equable warmth by diminishing radiation at night. In some countries they are the only building-stones, as in East Friesland and the neighbourhood of Groningen. In others they supply the necessary lime, as at Königsberg, Revel, &c. Those of a convenient size are used in Russia and Poland, and in the Rhineland, where they are exceedingly well adapted for the repairs of roads.

ERRHINES (from ἐρήμη, and ῥήμα, 'the nose'), medicines which are applied to the nostrils, and which cause an increased flow of the secretion of the membrane with the immediate use of the offensive smell and taste; frequently also occasioning sneezing, and an unusual secretion of tears. Snuff of different kinds are familiar examples of this class of substances, and these generally cause sneezing, at least when first employed; but others, such as the turpeth mineral, merely produce an increased secretion of the membrane. Where sneezing occurs, a considerable shock is felt over the whole frame, and this effect advantage is sometimes taken to change the position of the system, or to remove morbid impressions, as when certain fits are impending, or for more limited purposes, such as dislodging any foreign body from the nose. The secondary effect of errhines is more frequently desired to give relief to the loaded vessels, by exciting them to increased secretion. Hence they are used in various diseased conditions of the organs of smell, and even of the neighbour ing organs, being supposed to influence the vessels of the eye, and even of the brain. Some affections of the eye, and also of the head, are certainly relieved by such means, and their occasional use may be permitted; but the habitual use of them, or of errhines of the greatest power, is attended by hurtful consequences. The membrane of the nose becomes thickened, its sensibility impaired, and the power of discriminating odours greatly lessened; while, if the sub nasal parts be possessed at the same time of narcotic qualities, such as snuff procured from tobacco, they are much, and other organs concerned in digestion likewise suffer, and loss of appetite with other symptoms of indiscretion result.

ERRINA. [MILLFORIUM.]

ERROR (in law), a fault in the pleadings or in the process, or in the judgment, upon which a writ is founded, called a writ of error (breve de errore corrigendo), is brought. It is the ordinary mode of appeal from a court of record, and is in the nature of a commissary or writ of quo warranto. The plaintiff is superior to that in which the judgment was given by which they are authorized to examine the record, and on such examination to affirm or reverse the judgment according to law. For the cases in which this writ is issued, and the caused, see Error, Gist.

ERSKINE, THOMAS LORD, was the third and youngest son of David earl of Buchan. He was born, according to some authorities, in January, 1748, and received the rudiments of his education partly in the school at Alloa, and partly under the tuition of the famous Mrs. St. Andrews. In 1764 he entered the navy as a midshipman, but not thinking his prospects of promotion in that service sufficiently good, he accepted a commission in the first regiment of foot in 1766. In 1770 he married Frances daughter of John Mar, Lord Marlow, and soon after went with his regiment to Minorca.

Upon his return to England, in 1772, he appears to have become remarkable for the brilliancy of his conversational talents. (Wraux's Memoirs, vol. i. p. 152.) He afterwards went as diplomatic in the East, and was faced with the task of forming an undersecretary of state. In 1775, at the pressing solicitation of his mother, but it is said against his own judgment, he commenced the study of the law, and entered himself a student of Lincoln's Inn, and also a fellow commoner of Trinity College, Cambridge, but only for the purpose of obtaining a degree, and thereby saving the additional term of two years, during which his name must other wise have remained on the books of Lincoln's Inn. He became the pupil of Mr. Buller, and afterwards of Mr. Wood, both of whom were subsequently sent to the bench. It is said that Mr. Erskine was called to the bar, where his success was as rapid as it was brilliant. In the same year he was employed as one of the counsel for Capt. Baillie, lieutenant-governor of Greenwich Hospital, which was held for alleged libel on the other officers of that establishment. The prosecution was in fact instituted by Lord Sandwich, then at the head of the admiralty, who, it appeared, had abused the charity by appointing landmen as pensioners to serve his own electors. Erskine produced eloquent and dignified speech at once established his reputation; such indeed was its instantaneous effect, that thirty retainers were presented to him before he left the court. His practice and reputation increased so rapidly, that in 1783, when he was not yet thirty years of age, he was called to the bar, he received a patent of precedence at the suggestion of Lord Mansfield, who then presided in the court of King's Bench. In the same year Mr. Erskine was returned member for Portsmouth, through the interest of Mr. Fox, the Duke of Newcastle being dead. In 1803 he was called to the bar, and in 1809 he was made counsel for the Duchy of Cornwall; and in 1806, on the formation of the Grenville ministry, he was appointed lord chancellor.
and raised to the peerage by the title of Baron Erskine, of Restormel Castle, in Cornwall. His tenure of office was however brief, for on the dissolution of the ministry in 1807, he retired from public life. After this period Lord Erskine seldom appeared in his place in the House of Lords, but in 1820 he took a prominent part on the occasion of the trial of Queen Caroline.

In the later years of his life he was harassed by pecu-

nary embarrassments, arising from the loss of his large personal fortune, and an unfortunate settlement of the

fruits of his industry in land. His first wife died in 1805,

and an ill-assorted second marriage increased his domestic

disquietudes, injured his reputation, and gave pain to his

friends. He died Nov. 17, 1823.

The Erskines were peculiarly those of an

accomplished and dexterous advocate: his eloquence formed an

era at the bar, and his addresses to juries captivated their

understandings, their imaginations, and their passions;

they were not marked by beauty of diction, richness of or-

nament, or felicity of illustration, but by strength, vigour,

and simplicity, and a perfect freedom from colloquial vul-

garisms. A remarkable feature in his speeches is an exact

and sedulous adherence to some one great principle which

he laid down, and to which all his efforts were referrible and

subsidiary. As the principle thus proposed was founded on

truth and justice, whatever might be his ingenuity in

applying it to the particular case, it naturally gave to his

address an air of honesty and sincerity which had great in

fluence with the bar.

His extraordinary talent was developed by the times in

which he lived; his indigent eloquence was called forth in

defence of those individuals in whose persons the court

and the government attacked the liberty of the press and

correspondence. The public gave him a share in the ferment

from the recent events of the French revolution;

and the government, in their hatred of the great principles

of liberty then being established, forgot that actions, not

principles, are the proper subjects for prosecution.

As counsel for the defendants in those political prosecutions, Lord Erskine made his noblest and most successful efforts;

fearless and zealous in the cause of his client, he spoke

home truths without using unnecessary violence or low in-

vocation.

Lord Erskine has left few productions in writing; the

principal are the Preface to Fox's Speeches, the political

romance called 'Armata,' and a pamphlet entitled "View

of the Causes and Consequences of the War with France,"

which passed through 40 editions. His speeches have been

published in 2 vols. Lord Erskine is not to be consid-

ered as a literary man; but it is one of the many singu-

larities in his history, that with a scanty stock of what is usu-

ally called literature, he should have been one of our purest

clerical writers. Each has the external antennæ of a few of the greatest models, and these he almost knew by

heart. He greatly admired the writings of Burke, and fre-

quently quoted them in his speeches.

Scanty notices of the life of Lord Erskine are published in

Lardner's 'Cyclopedia' ('Lives of British Lawyers') and the 3rd vol. of the 'Gallery of Portraits,' from which this

account has been taken. There are some remarks upon

the style of his eloquence in Butler's 'Reminiscences,' vol.

1, p. 76. His statue is in Lincoln's Inn Hall.

ERYCI'NA. [LANIADRE.] 

ERYCINIA. [VENERIDE.] 

ERYON, Desmarest's name for a macrourous crusta-

cean, one of the smaller class.

External antennæ short (one-eighth of the total length of

the body including the tail), scapo-ceous, provided at their

base with a rather large scale, which is ovoid and strongly

notched on the internal side; intermediate antennæ scapo-

ceous, ciliated posteriorly, so that the internal one of them

having their filaments equal. Feet of the first pair nearly

as long as the body, slender, linear, not spinous, terminated

by very long and narrow cheloth, with fingers little bent,

but slightly inclosed inwards; corpus short; feet of the

other pairs also slender, and those of the second and third

pair terminated with pincers, like the feet of the crawfishes

terminates, and elongated in the middle of the body.

Carapace very much depressed, wide, nearly

square, but little advanced anteriorly, profoundly notched

on its latero-anterior borders. Abdomen rather short,

formed of six articulations, of which the four intermediate

ones have their lateral borders prolonged in angles, well

detached, as in the crawfishes. Caudal-fin formed of five

pieces, of which the two lateral are entire, rather large, a

little rounded on the internal side, and the three middle

ones triangular and elongated, especially the intermediate

one.

Locality.—Lithographic limestone of Pappenheim and

Aichstedt in the Margravate of Ansbach. (Desmarest.)

M. Desmarest observes that this genus is entirely ano-
malous, and supposes a general anatomical confusion of the

Erksine's Fauna, for the genera Eryon and Scyllaridae

are as incomparably different from one another as the
two genera, the lizards and the crocodiles. In his

article on Eryon, he has given his own account of the

species, which is the sole one that has ever appeared in

the published literature. In this section he describes and

Publishes this species, which he considers as the most

valuable in the genus.
part of the skin which is more especially inflamed. If the rete mucosum, or the part of the skin which is placed immediately beneath the cuticle [Skin] be the principal seat of the inflammation, the vesication is remarkable; there is commonly a considerable distension from the vesicles, and a free exfoliation of the cuticle: if, on the contrary, the inflammation be chiefly seated in the cutis vera, or the true skin, namely, that portion of the skin which lies immediately beneath the rete mucosum, the cellular tissue beneath the epidermis of the cutis vera, it is sometimes not involved, and then the tumefaction is considerable on account of the infiltration of the cellular tissue with serum poured out from the blood by the inflamed cuticle.

Erysipelas is characterized by its tenacious exfoliation of the cutis vera; it commonly involves a considerable portion of the external surface of the body. It creeps on in succession from one part of the skin to another until it extends to a great distance from the part originally attacked, the inflammation often disappearing from the former as it becomes visible in the latter. This is proved by the fact that constitutional disturbance always precedes, commonly for the space of two or three days, the appearance of the local affection.

An attack of erysipelas comes on either with chills or a distinct cold shivering, accompanied with a sense of palpitation in the limbs, restlessness, and that disordered state of the skin which has been expressed termly febrile uneasiness. There is from the beginning uneasiness or confusion in the head, which soon amounts to decided pain. The tongue is accompanied with such a degree of dryness, that the attack may sometimes be predicted long before there is any appearance of redness or swelling in the face, from the insufficiency of the patient to keep himself awake. The chilliness is soon succeeded by heat of skin; the whole body sweats, the bowels are constipated, the tongue is dry and parched, there is sometimes nausea and vomiting; the pulse is always frequent, sometimes full, soft, and compressible, but occasionally hard and tense.

After these symptoms have continued some time, always observe in the face of the victim the inflammatory humor has been brought on some part of the face a redness, attended with burning heat and tingling. Commonly a red spot appears on one cheek; after a short time a similar spot appears on the other cheek; often the redness spreads successively from one cheek to the other across the nose, which is completely involved in the affection: from the nose it extends to the forehead, and thence over the whole scalp. Soon after the redness appears the face begins to swell; and by the second night, or the morning of the third day from the commencement, the face becomes a bright red, and these everted ridges of the lids exceedingly prominent, the nose distended, and the ears tumid, red, shining, and burning. On the fourth or fifth day the vesication appears on the inflamed surface, which extends to the fifth or sixth, when the redness changes to a yellowish hue. The whole face is now so turgid that the form and expression of the features are completely lost, and the patient could not possibly be recognized by his most intimate friend.

When the erysipelas skin in the blistered places becomes covered with a brownish or dark coloured scale, which often gives a livid or blackish appearance to the part; but this livid colour seldom goes deeper than the surface, and does not proceed from any degree of gangrene affecting the skin. On the parts of the face not affected with blisters the cuticle is destroyed, and desquamates, a new cuticle being formed beneath it. Though the face, in general, however intensely inflamed, seldom goes into suppuration, yet it is by no means uncommon for matter to form in the tumid eyelids.

Occasionally, though not often, when erysipelas attacks the face, it extends to the mouth and fauces, and even to the pharynx and larynx, at the same time that it covers the neck and chest externally. Dr. Copland mentions a case in which the enormous eruption of the neck and throat with the affection of the larynx and trachea, increased by the constriction produced by the integuments surrounding the neck and throat, caused suffocation in a few hours.

When the inflammation extends to the fauces, throat, and larynx as a symptom of erysipelas, it is almost always accompanied with hoarseness and laryngeal obstruction. On whatever part of the body the inflammation appears in erysipelas, even when it is strictly confined to the skin, its appearance is not attended with any remission of the fever which preceded it: on the contrary, the fever generally increases with the augmentation and extension of the inflammation.

The progress of the disease is more or less rapid, and its duration longer or shorter, according to the age, the temperament, and the vigour of the individual. In the young, the manner of the attack is accompanied with fever, and death frequently takes place, with many of the symptoms of apoplexy on the seventh, ninth, or eleventh day of the disease. In such cases, says Dr. Culien, 'it has been commonly supposed that the disease is translated from the external to the internal parts. But I have not seen any instance in which it did not appear to me that the affection of the brain was merely a communication of the external affection, as this continued increasing at the same time with the internal.'

1. When the fatal event does not take place, the inflammation, after having affected a part, commonly the whole of the face, and perhaps the other external parts of the head, ceases. With the inflammation the fever also ceases; and, without any external aid, the patient returns to his ordinary state of health.

In the cases which prove fatal, on the examination of the body after death, the inflamed skin is found infiltrated with serum, which is sometimes mixed with pus, and occasionally containing the cells of the inflammation; and the blood, which has been conveyed to the cellular tissue and has passed into suppuration. In the cases attended with delirium coma the membranes of the brain, and especially the arachnoid, are thickened and opaque with the effusion of serum between the membranes which support the face and the body; the tissues have been complicated with inflammation of the fauces, pharynx, osophagus, trachea, and bronchi; these organs present the ordinary signs of inflammation; and the same is true with regard to the mucous membrane of the stomach and intestines; but these more remote effects of inflammation are much more closely allied to those which occur in fever than to those which are proper to pure inflammation.

There is a peculiar condition of the skin which seems to predispose to erysipelas connecting with the cranium, and irreducible by the greatest heat however produced, whether by the direct rays of the sun or by a fire; intemperance; unworthy articles of diet, as shell-fish, or stale and rancid fish; rich, oily, fat, or smoked meats; impure states of the atmosphere; an impure state of the body, arising from a morbid condition of
the blood, in consequence of the suppression of its depurating processes, whence the frequent occurrence of the disease in the advanced stages of fever, greatly complicating the state of fever and exhausting the little remaining strength of the patient. Violent emotion of mind has also been observed in an exciting cause of erysipelas by those powerfully predisposed to the disease; in whom also local irritants often induce it, as wounds or punctures in the skin, the bites of leeches, the stings of insects, inoculation with various or vaccine matter.Instances are on record in which both variolous and vaccine matter have produced in children of irritable habits, two or three days after inoculation, an erysipelatous inflammation which has proved fatal.

It is a point much disputed whether erysipelas be capable of being propagated in contagious forms, as by Dr. Bateman, "has been noticed in several hospitals to prevail in certain wards, among patients admitted with different complaints; but has seldom been known to spread in private houses. Dr. Wells, indeed, has collected several examples of the apparent for inoculation of erysipelas by contagion, which occurred in private families. But such are at all events extremely rare, and perhaps never happened in well ventilated and cleanly houses. From the Royal Infirmary, at Edinburgh, this disease, like the puerperal fever, is propagated by warm drinks, fumes of various kinds, and other means of purification; and it has not occurred in any hospital of late years, since a better system has been adopted in these respects. Other diseases, not infectious in themselves, appear to become united with typhus, or contagious diseases, propagated by various causes. In some cases, the inflammation has been propagated in their double form; the dysentery, for example, the peritonitis in women in child-bed, ulcerated sore throat, &c. The simple phlegmonous erysipelis, at all events, was never seen to spread like an infectious disease.

The danger of erysipelis is in proportion to the intensity of the inflammation, and the severity of the affection of the brain. The danger is also imminent when there is great tumefaction of the throat or face, to the respiratory passages and the respiratory organs. As long as the inflammation is confined to the external surface, and the fever remains moderate, the brain not much affected, and the heart's action not inordinate, a favourable termination may be expected. If the varieties or species of the disease are attended with very different degrees of danger. Authors usually describe four species, namely, the phlegmonous, the oedematous, the gangrenous, and the eratic. The phlegmonous is that form of erysipelas, in which the inflammation is most evident, and the term is the most distinctly marked. In the oedematous the fever and inflammation are less intense; but the tumefaction is so great that the appearance of the face resembles that of a bladder distended with water. This form of the malady is attended with the most effects of distention. Those persons, who have been previously attacked or are simultaneously affected with dropsy, or some other chronic disease, incidents to a cachectic state of the system, and induced commonly by habitual intemperance. It is always attended with great fever and profuse perspiration. As in the phlegmonous, in the hotch-potch of fever, it appears to me to afford considerable relief.

In the eratic species, erysipelas occurs in broken-down constitutions, the result of habitual intemperance, even purgatives must be very cautiously administered; the strength is always less, and the morbid affections are more liable to be augmented by the use of stimulants, or the other stimulants. In the gangrenous species, or the application of a cool but slightly stimulant lotion, such as cold water, or a mixture of vinegar and salt, has appeared to me to afford considerable relief.

In the oedematous species, when it occurs in broken-down constitutions, the result of habitual intemperance, even purgatives must be very cautiously administered; the strength is always less, and the morbid affections are more liable to be augmented by the use of stimulants, or the other stimulants. In the gangrenous species, or the application of a cool but slightly stimulant lotion, such as cold water, or a mixture of vinegar and salt, has appeared to me to afford considerable relief.
cularly indicative of, and produced by, some disorder of the
digestive organs.

2. The shining (Erythema) luteum), exhibits a uniformly
shining or glowing surface. It chiefly appears on the lower
extremities in connective patches. It is sometimes the
symptom of disorder of the digestive organs; occasionally
attends the cutaneous in delicate and irritable females,
but most commonly accompanies nausea or emetic
stomach, and is often seen in their faces. It is sometimes
so great as to stretch the skin, this Erythema is liable to
be produced, and is often checked with patches and
streaks of a dark red and purple hue. It commonly
terminates in extensive disquamation of the skin, and may
be considered as merely a modification of edematous eryt-
chelae.

3. Marginated (Erythema marginatum) occurs in patches
which are bounded on one side by a hard elevated tor-
uous red border, in some places obscurely papulatum; but the
edges of the patches, or cycls, or circular arcs, of the
patches appear on the extremities and loins in old people,
and remain for an uncertain time, without producing any
irritation in the skin. They are connected with some in-
ternal disorder, and may be considered as indicative of
some constitutional affection.

4. Papulatum (Erythema papulatum) appears chiefly on
the arms, neck, and breast, in irregular extensive patches,
and most frequently in females and young persons. The
patches are of a bright red hue, often slightly elevated; and
for the most part slightly rounded or oval, or two or more
patches join to form a larger one. The redness afterwards
continues for several days; and, as it declines, assumes,
in the central parts, a bluish or pale purple tinge. This variety
is generally attended by an itching sensation, passing to
sensations of pain; and sometimes with marked
constitutional disturbance, with a frequent small pulse,
loss of appetite, depression of strength and spirits, watch-
fulness, and pains or tenderness of the limbs, but the gene-
ral symptom is itching.

5. Tuberculatum (Erythema tuberculatum) is merely a slight
modification of the advanced stage of the papulatum.

6. Nodose (Erythema nodosum) consists of large oval
patches on the fore part of the legs; the long diameter of
the patches, or cycls, or circular arcs, of the patches is
longer than the breadth, and the patches arise into
hard and painful protuberances, and as regularly
often and subsides in the course of nine or ten days. The
red colour turns bluish on the eighth or ninth day, as if
the leg had been bruised. It chiefly affects children, and
more rarely females, and is very seldom observed in boys.
It is preceded by slight febrile symptoms for a week or
more, which generally abate when the erythema appears.
It is sometimes connected with the approach of the cat-
amenia, and its premature disappearance is not unfrequently
accused by dangerous internal disease, as inflammation of
the lungs.

The primary causes of erythema are the friction of con-
tiguous parts, especially in fat persons; the accumulation
of morbid secretions and excretions on the skin, as the
result of the action of the lesions of the skin, and the
cutaneous, and of the alvine and urinary evacuations,
in the adult in the course of other diseases, and in the
infant in consequence of a want of proper ablation. It is
also constantly produced by irritating articles of food and
drink, and is the cause and the result of a disordered state
of the digestive organs.

In some cases the affection disappears soon after the re-
moval of the cause which produces it—by free ablation
when it is the result of irritating matters on the skin, and
its disappearance is assisted sometimes by the application
of an absorbent powder to the inflamed surface, and at other
times by the use of a gently stimulating lotion, as the spirit
wash. When the disease is dependent on a disorder of the
digestive organs, one or two doses of a stimulating
preparation is proper for the removal of the stomachic, or the
hepatic, or the intestinal derangement. For the restoration of
these organs to the sound condition, the most appropriate re-
medies are light diet, diaphoretics, the mercurial alterna-
tives in combination with gentle aperients, and the mineral acids
as tonics. (Bateman's Practical Synopsis of Cutaneous
Diseases; Copland's Dictionary of Practical Medicine.)

ERYTHREÆ, a pretty genus of annual plants, belong-
ing to the natural order Gentianaceae, and inhabiting dry
sandy places in Great Britain and other parts of Europe,
especially near the sea. The species have small oval sessile
ribbed radical leaves, diminishing in breadth as they ascend
the stem; a corymbose stem, a five-leaved calyx, pink funnel-
shaped flowers, with a short five-lobed limb, five stamens,
spiral and anthers, two roundish stigmas, and a linear capsule.
They are a little extremely bitter, and are collected by country
people, under the name of centaury, as a substitute for gen-
tian, in domestic medicine. British botanists reckon four
supposed species.

ERYTHREUM, CENTAURIUM, Lesser Centaury, an
indigenous plant, common by waysides and edges of fields,
flowering in August, at which time it is to be collected.
The whole plant is taken up; it has a square stem, with
opposite entire three-nerved leaves. It is devoid of colour;
the taste is strongly bitter, but not unpleasant; 100 parts
of the fresh herb dry into 47; 10 parts of the dry herb
yield by a single cocction 3 pounds of extract.

It contains a principle called Centaurn, which at present
is known only as a dark brown extract-like mass; but
which, united with hydrochloric acid, furnishes an excellent
fabrifuge medicine. As a bitter, it suits irritable systems
better than any article of that class of medicines, and is
therefore to be preferred. In other respects it has the
general properties of bitter tonics.

ERYTHRINA, a leguminous genus of tropical trees
and tiborous herbs, with tertiary leaves, and clusters of
very large long flowers, which are usually of the brightest
red; whence the species have gained the name of corals.
Frequently their stem is defended by stiff prickles.
They occur in the warmer parts of the Old and New
World. An Indian species, E. monosperma, is said to yield gum-lac.
De Candolle mentions thirty-two species; of which E. cris-
tis galli is commonly cultivated in greenhouses for the sake
of its splendid blossoms.

ERYTHROGEN, a neutral crystalline fatty matter found
by M. Bizio in bile altered by disease.

ERYTHRUM (Dens Canis), a pretty little bulbous
plant, whose name, Englished dog's-tooth violet, is derived
from the form of its long slender white bulbs, is a native
of woody subalpine places among hushes and stones, in Croatia,
Irdia, and about Leybach; it also occurs in Switzerland,
but more seldom. It is also met with in the north of Italy.
It is not mentioned in the Flora of the south of Europe.
Two or three varieties are known in gardens as gay hardy
flowers appearing early in the spring; one with purple, a
second with white flowers, and a third, elevated by some
into a species, with a somewhat stronger habit of growth.

ERYTHROXYLÆ, A group of exogenous plants, con-

[Image: Erythroxylon lactifolium]
ERZEBURG is important as a commercial town. Besides the produce of its manufactures it exports the excellent grain which is grown in the plain. But it derives other commercial advantages from its being situated on one of the most frequented caravan roads of Western Asia, which leads from Erzerum and Giresun to the great commercial towns of Asia Minor. This renders Erzerum an important place also in a political and military point of view. It is the seat of a pasha, and the pašnàlik yields only in rank and extent to that of Bagdad.

(Knimr; Brant, in London Geog. Journ.)

ERZEGEBIRGISCHE KREIS (circle of the Ore Mountains), a large province of the kingdom of Saxony, which takes its name from the mountains which bound it on the south and separate it from the kingdom of Bohemia. On the north it is bounded by the grand duchy of Saxe-Altenburg; on the west by the grand duchy of Saxe-Weimar, the principality of Reuss, and the circle of Voigtland; and on the east by the circle of Meissen. It is the largest and most populous province in the kingdom, and contains an area of about 1747 square miles, on which there are 58 towns, 13 market villages, and above 700 villages and hamlets. In 1829 the population was 458,863, and it is at present estimated at about 506,000. The surface rises gradually from the borders of the kingdom into Saxony, and Meissen circle, until it reaches the southern frontier and the lofty summits of the Ore Mountains. The province is intersected in all directions by offsets from those mountains, and presents a constant succession of hills and valleys. The loftiest heights in the province are in the circle of Fichtelberg, at the northern extremity of the province, which is 3968 feet, and the Auerberg, about eleven miles north-west of the Fichtelberg, which is 3132 feet above the level of the sea. The Freiberg of Saxony is the largest and most extensive river in the province, it flows through its eastern districts, and the Schneeberg or Western Muldo through the western districts; the source is at the Zschopau, Fichte, Pohl, Sehn, Bockau, Chemnitz, and other streams; the Wiesitz or district of Lichtenberg, which traverses the most elevated parts of the Ore Mountains, is the most westerly. There are no inland waters deserving the name of lakes, but there are a number of mineral springs, chiefly used for bathing, at Wolkenstein, Wiesa, near Annaberg, &c. The province is full of woods and forests, and contains its most elevated parts, such as the vicinity of Schwarzenberg. The average height of the Erzgebirgische Kreis above the level of the sea is estimated at 1200 feet.

In consequence of the rugged character of the surface, the soil, the clay soil, and the rawness of the climate, neither agriculture nor horticulture are pursued on a scale of sufficient extent to supply the wants of the province. Oats, rye, linseed, potatoes, and a small quantity of wheat, are cultivated; these articles are also imported from Bohemia and Russia. The province of Saxony is admirably adapted to extensive pastures, particularly in the vicinity of Zwickau, Chemnitz, Augustusburg, Freiberg, and Nossen, where large flocks of sheep are kept; but cattle-breeding, on the whole, is not so actively carried on as it might be. The province is well known for its large trout, its salmon, carp, and other fresh water fish.

The very name of this part of Saxony, 'the circle of the Ore Mountains,' indicates the peculiar character of its natural resources. It abounds in mines of silver, tin, lead, iron, colbalt, &c., the first working of which is said to have taken place in the middle of the twelfth century. Their most flourishing state was in the fifteenth, when the silver mines of Schneeberg and Annaberg and the tin mines of Altenburg were in a flourishing state and opened. At that time they afforded employment, either directly or indirectly, to upwards of 200,000 persons. The largest silver mines are in the neighbourhood of Freiberg, of which the Erbsdorf alone produced 3,484,580 ounces of silver between 1763 and 1818; they are about 2000 feet below the surface, and are worked to a depth of 4800 fathoms. The output of the other silver mines is at Schneeberg, Schwarzenberg, and Annaberg. The tin mines of Altenburg are the most considerable. There are also mines of coal at Altenburg and Geier; others at Schneeberg, &c. No mine in Saxony produces so much iron as those of Johann-Georgenstadt; this metal is also obtained at Schneeberg. Altenberg, &c. Near Anc and Bockau, to the south of Schneeberg, in what is called the 'Saxon Siberia,' lie the largest...
of the range descends in more gentle slopes towards the plain of Northern Germany; and these slopes are divided from one another by wide and open valleys. A line drawn from Pirna on the Elbe to Tharand, Freiberg, Chemnitz, Zwickau, and Reichaeh, indicates with tolerable correctness where the range on this side ceases. The undulating plain which lies contiguous to it may be from 500 to 600 feet above the level of the sea.

The highest portion of the range occurs on both sides of the Elbe: the range descends to the level of the Pleisse above 30' at Altenberg, and to the level of the Elbe above 30' at Dippoldiswalde. The range extends to the west, thence north, and to the north-west, where the 1824 line of the Zwickau, Keilberg, 412 feet, the Fichtelgebirge, 3968 feet, the Schwarzenberg, 3988 feet, and the Hassberg, 3248 feet above the sea. Further east and farther west the range gradually sinks lower, the Great Chemnitz, on the banks of the Elbe, rising only to 1243 feet above the sea. This range belongs to the primitive formation, granite and gneiss being everywhere prevalent, except along the banks of the Elbe, where sandstone alone exclusively occurs. It is rich in metals of almost every kind, from which circumstance indeed its name is derived, though it is less productive than it was some centuries ago. The working of the mines is pursued with great activity and skill, and it is stated that more than 10,000 families are dependent on them for their livelihood. Gold occurs in a large number of places, but is only to be found in the upland districts various articles in wood are manufactured.

This province also includes the independent earldom of Sohm-Wildenfels, with an area of 1526 square miles, inhabited principally employed in making linen, coarse cotton, and stockings; and the possessions of the prince and counts of Schönburg, in the north-western part of the province, comprising an area of 232 square miles and a population of 5200, is in splendid condition, as well as manufactures. The chief town is Glau- chau, on the Western Mulde, with 5000 inhabitants, and manufactures of woollens.

The province is divided into the "Antonhauptmannschaftsbezirk" or bailiff's districts of Chemnitz, Zwickau, Walkenstein, and Freiberg. Chemnitz, in the northwest, contains the towns of Chemnitz (see vol. vii. for description), Frankenberg on the Zschopau, 5200 inhabitants; Oederan, 3600; Zschopau, on the river of that name, 3300; Weesenstein, 2100; Radeburg, 1600; Glau- chau; Hohnstein, 3600; Waldenburg, on the western Mulde, 3000; Penig, on the same river, 3100; and St. Merzina, 2300. The bailiwick of Zwickau, in the west and south-west, contains Zwickau, on the western Mulde, with 5400 inhabitants, and manufactures of porcelain, and the Zschoppau, 4500 in population, on the river of the same name; and on the Pilsa, 3600; Wildenfels; Schwarzenberg, on the Schwarzwasser, 1400; Wiesenthal, 1600; Johann- Georgenstadt, on the Schwarzwasser, 2700; and Schneeberg on the Schloenborn, 5600. The bailiwick of Wolkenstein, containing the town of Tharand and a few others, 1600 inhabitants; Geyer on the Pleiss, 1800; Zellitz, 1100; Elterlein, 1200; and Stollberg, 3800; and the bailiwick of Freiberg, in the east, contains Freiberg, on the eastern Mulde, the chief town, with 11000 people; Saydelingen, 1200; Rosawein, on the same river, 3200, with woolen manufactures; Frauenstein, 500; and Altenberg, 1600.

ERZEBIRGE (the Ore Mountains) is a mountain-range in Germany, extending along the boundary line of the kingdoms of Bohemia and Saxony. It begins about 25 miles south-east of Dresden, on the very banks of the river Elbe, and extends from the source of the river called the White Elster (Wieser Elster), about 15° 30' E. long., where it is connected with the Fichtelgebirge. The river Elbe divides its eastern extremity from the Winterberg, the most western of the numerous peaks of the Ore Mountains, separated by a range of hills, and several other mountains, one hundred miles in length, and their mean width, is estimated to be more than thirty miles.

The highest part of the range, which is towards its southern border, forms partly the boundary-line between Bohemia and Saxony. In the middle of the Sonnenberg, and the Hohenzollern, lie the towns of Neukirchen, Dorf Kirchensen, and Elsterwall; the valley of the river Eger, about 10 or 15 miles from the upper range.

The valley of the Eger lowers gradually from west to east, from 600 to 100 feet above the sea. The northern de-
ESCAPEMENT. [MECHANICAL.]

ESCAPING, or SCARP, in fortification, is that side of the ditch surrounding or in front of a work, and forming the exterior of the rampart. In field works the escarp is usually formed by cutting the earth at such an inclination as will permit it to support itself, which may be at 15 degrees with the horizon or more, according to the structure of the soil; and, to impede the enemy in attempting an assault, frises or inclined palisades are frequently planted on the slope. In large fortresses the escarp is the exterior surface of the revetment wall which supports the rampart, and it is frequently formed at such an inclination that its base, measured in front of a vertical plane passing through the top of the wall and in the direction of its length, is one half the height of the wall; but engineers at present recommend both the escarp and countereasps to be vertical, from an opinion that the action of the weather upon the brick-work will thereby be diminished. [REVIEW.]

ESCAPMENT, a precipitous side of any hill or rock. In military operations ground is frequently scarped, as it is called, or cut away nearly vertically in a position, in order to prevent an enemy from arriving at the latter. Part of the rock of Gibraltar has been rendered inaccessible in this manner: and, in the execution of the movements about Ladron, in 1808, the British troops formed an escarpment from 15 to 20 feet high, and about two miles long, on the brow of a ridge of heights extending from Alhambra to the valley of Cadiz, in order to secure the line against an attack at that part. A similar work was executed along a ridge of hills between Mafra and the mouth of the S. Lorenzo.

ESCHARA. [POLYARYMA MEMBRANACEA.]

ESCHAROTIC (χερωκάριον, from χερωκα, to form a crust, or scab), are agents applied to the surface of the body, which destroy the vitality of the part which they touch and produce a eschar. This effect they occasion either by combining chemically with the animal matter, or by destroying the old affinities, and causing the elements of the part to enter into new combinations. Their action is more energetic in proportion to the degree of vitality of the part to which they are applied. They are classed under two heads, the potential eschars, and the actual eschars: the former are chiefly chemical agents, and form new compounds with the elements of the part, and by reason of their constitution, decompose and destroy the vitality of the part in contact; but some merely cause irritation and augmented absorption, and are distinguished as erosants. The actual eschars are substances of an elevated temperature, which decompose the part which they touch, and completely destroy its organization.

The chief potential eschars are strong mineral acids, such as the sulphuric or nitric, pure alkalies, and some metallic salts, especially nitrate of silver, or lunar caustic. These are used either to produce counter-irritation, or to remove fungous or nodular growths. Lunar caustic seems to possess peculiar properties, and is unquestionably the most powerful direct antiphlogistic agent known. If applied in the solid state to many inflamed parts it speedily checks the morbid action, and is decidedly the best application to chills, and in erysipelas. The actual eschars are used either for their primary action, viz., the immediate destruction of the part, or for their secondary effects. The former object is rarely attempted, except to prevent the absorption of any poisonous or contagious matter, such as a scab or a wound. The secondary effects are more important, and more varied, according to the degree of heat of the substance applied.

The secondary effects are more important, and more varied, according to the degree of heat of the substance applied. The first effect is pain more or less severe, a flow of blood towards the part, and more rapid performance of the processes of inflammation, and absorption and destruction of the exudations. The secondary effects are more important, and more varied, according to the degree of heat of the substance applied. In phthisis pulmonalis, or consumption, where pain is more often relieved by vasacling than any other means, placing a sponge in a wine glass, and pouring boiling water into it, and suddenly pouring the glass over the part of the chest where the pain is felt, will cause immediate vasocling, followed by speedy relief. The vapour of boiling water, as it issues from the spout of a kettle, is also a convenient method of applying heat in inflammations of the joints, as in gout, morbus coxarum, and other deep-seated diseases of the bones. As the red-hot iron is now seldom used, being confined to veterinary medicine, moxa affords the best substitute, and it is very convenient, since many degrees of intensity or rapidity of action can be given to it. [Moxa.]

The "eschar" which follows the application of the potential or actual cauteries generally separates in a few days. The ulcer is then to be treated with different agents, according to its situation and composition of its crust or eschar. If a bastard eschar is extensive and without issue, his lands escalet to the lord of whom they are held.

Exchequer takes place when the tenant of lands dies intestate and without an heir: in such case the lands, if freehold, escalet to the king, or other lord of the fee; if copyhold, to the lord of the manor. Lands which have descended to the last tenant from a paternal or maternal ancestor, escalet to the heir of the tenant, or tenant in chief, from whom the lands descended. Since the 1st day of January, 1834, there can be no escheat on failure of the whole body, wherever there are persons of the half-blood capable of inheriting, as in the case of a Will for IV, c. 1864.

If a bastard dies intestate and without issue, his lands escalet to the lord of whom they are held.

Escheat also takes place upon attainder for treason and murder, by means of which the blood is in law considered to be a corpus delicti, and the heir of the deceased incapable of holding them himself, or transferring them by descent. In consequence of this extinction of heritable blood, the lands of such felons revest in the lord, except in cases of treason, when a superior law intervenes, and they revert to the crown. Some of these principles are also applicable to the case of a man who by legal illegitimacy has been deprived of the possession of any property vested in any trustee or mortgagee shall escheat or be forfeited by reason of the attainder or conviction for any offence of such trustee or mortgagee, except so far as such trustee or mortgagee may have a beneficial interest in such property.
This doctrine of escutcheon consequent upon the commission of certain orimes is derived from the feudal law, by which a vassal was only permitted to hold real property upon condition of well demeaning himself.

The first escutcheons, with regard to extinct successions, seems to have been adopted in every civilized country to avoid the confusion which would otherwise arise from the circumstance of any property becoming common; and the sovereign power, or those who claim under it, are consequently unable to every inheritance to which no other title can be found.

ESCHEATOR, an ancient officer appointed by the lord treasurer, and so called because his office was to look after escheats, warships, and other casualties belonging to the crown.

There were at first only two escheators throughout England, one on this side and the other beyond the Trent; but in the reign of King Edward III. there was one appointed for every county, which was in office for one year, and afterwards to the next which should be vacant. (Blackstone's Commentaries; Wooddison's Lectures.)

ESCHSCHOLTZIA, a genus of beautiful yellow-flowered papaveraceous plants, inhabiting California and the northwestern coast of North America, and now become extremely common in the gardens of Great Britain. They are known by the base of their calyx remaining at the base of the silique fruit in the form of a firm fleshy rim, by their calyx being thrown off like a calyptra when the petals unfold, and by the stamens being inserted into the edge of the permanent part of the calyx. These are, as near as may be, very near our sea-shore Glaucium. Two certain species only, E. Californica and E. crocea, have yet been introduced; a third, E. compacta, is figured in the 'Botanical Register,' but it is probably a mule between the two first. It has been recently adopted by the state of California as a state flower. (Eschwege.)

For precedents or examples which have been given as a pecuniary payment, by way of compunction for knight-service, whereby the tenant was bound to follow his lord into the wars at his own charge. The term escuce or scutage is from the old French esco, and that from the Latin escutum, 'a shield,' a name also given to coins on which there was the shield or escutcheon of the sovereign.

The personal attendance in knight-service growing troublesome and inconvenient in many respects, the tenants found means of compounding for it, by first sending others in their stead in the king's name at an agreed fee.

The escutcheons of the kings of England necessarily bear the name, as the only certain witness to the identity of a person, in the midst of disputes and differences.

It is necessary to understand the fact that, from this period, when our kings went to war, they levied scutages on their tenants, that is, on all the landholders of the kingdom, to defray their expenses, and to hire troops: and these assessments, in the time of Henry II. seem to have been made arbitrary and oppressive. The people of England were greatly abused by his successors, it became matter of national complaint, and King John was obliged to consent, by his magna charta (c. 12), that no scutage should be imposed without consent of parliament. But this clause was omitted in the reign of Henry III., that scutages or escucage should be taken as were they to be taken in the time of Henry II.; that is, in a reasonable and moderate manner. Yet afterwards, by statute 25 Edw. I. c. 5 and 6, and many subsequent statutes, it was enacted that no scutage or escucage was to be levied without the common assent of the realm. Hence it is held in our old books, that escucage or scutage could not be levied but by consent of parliament (Old Ten. tit. Escucage), such scutages being indeed the groundwork of all succeeding subsidies, and, in a manner, the origin of the right of taxation. (Jackson's Law Dictionary, in loco; Blackstone's Comment, vol. ii. pp. 74, 75.)

ESCULAPIUS. [Esculapius.]

ESCULIC ACID, a peculiar acid procured from horse-chestnut. This acid is colourless, insoluble in water, but dissolved by alcohol, and is deposited from it in crystalline grains. It forms with bases salts termed esculacites, but they are quite unimportant. Esculie acid consists of 8-35 hydrogen, 57-26 carbon, and 34-39 oxygen, in 100 parts.

ESCURIAL, or ESCORIAL, a vast edifice in the kingdom of Toledo, situated seventeen leagues from Madrid in a north-west direction. The term escorial is considered by some to be Arabic, meaning a place full of rocks, but by others is derived from scoria ferris, iron cross, from the circumstance of there having been antiently great iron works near this place. The building is of inferior quality, composed of all vegetable matter, except what has been conveyed there by man; and it appears to have been chosen for the advantage of procuring stone. The edifice was begun by Philip II., five years after the battle of St. Quintin, fought on the anniversary of St. Lawrence, when, as is known, circumstances it was intended to commemorate) and was finished in twenty-two years. This extensive building is laid out, on its ground plan, in the form of a gridiron, a part (which forms the royal residence) advancing to form the handle, attached to a long rectangle forming their courts and quadrangles. This part is 640 by 580 feet, and the average height to the roof is 60 feet. At each angle is a square tower 200 feet high. The plan is divided so as to form a convent with cloisters, two colleges, one for the clergy and order of seculars, the royal palace, three chapels, and other similar buildings, containing more than 30,000 volumes and some valuable MSS., five great halls, six dormitories, three halls in the hospital, with twenty-seven other halls for various purposes, nine refectories, and five refectories, for the accommodation of the monks.

There are no less than eighty staircases. The gardens and parks, formed by art, are decorated with fountains.

The monks of the order of St. Jerome were 200 in number, and had a revenue of 15,000L per annum.

The main building is of a square, and is divided into seven aisles. It is crowned with a dome 330 feet high from the ground, and is paved with black marble. In the church are forty chapels, with their altars in the pendentives, and in the church there is a profusion of gilded bronze work and incrustation of marbles. There are numerous paintings by the great masters in the Escorial. It is possible however that these may have been removed to the Royal Palace since.

In the Escorial there are many curiosities of architectural decoration, and 86 fountains.

The church is 374 feet long and 330 broad, and is divided into seven aisles. It is crowned with a dome 330 feet high from the ground, and is paved with black marble. In the church are forty chapels, with their altars in the pendentives, and in the church there is a profusion of gilded bronze work and incrustation of marbles. There are numerous paintings by the great masters in the Escorial. It is possible however that these may have been removed to the Royal Palace since.

The description of the Escorial is given in a curious details of the Escorial see 'The Escorial, or that wonder of the world for architecture and magnificence of structure, &c., translated into English by a servant of the earl of Sandwich in his extraordinary embellished 'Thurston,' London, 1671.' From the title-page it appears that there was a report in 1671 that the Escurial had been destroyed by fire. There was a similar report a few years since.

ESCUTCHEON or ESCOCHeton, the heraldic term for the shield, an object which in every variety of shape, arms are emblazoned. The word is derived from the French esculton, and that from the Latin escutum. The first representation of arms was, no doubt, an ornament to the shield. The shield afterwards became the appropriate and legitimate term for displaying them; hence in sculpture and painting they were never separated; and when shields ceased to be employed, their form remained, and still continues to be the field on which coat-armour is invariably depicted. An escutcheon of pretence is the small escutcheon used in the coat of arms for that of another, or the coat of his wife, if she is an heiress and he has issue by her. In this case the surviving issue will bear both coats quarterly.

ESNE. [Egypt, p. 312.]

ESOTERIC. [Esoteric.]

ESPALIER. [Espalier.]
to be broken by high winds, and in small gardens in particular, where room is of great importance, and where a collection of the finer sorts of fruit is always desirable; it is found highly useful, both on account of the small space which the trees occupy, and because they will bear fruit much sooner than when allowed to grow in their natural form.

In France and other parts of the Continent this kind of training is used, and even in England and in Scotland, where the borders of the kitchen-garden are frequently planted with flowers, in order to combine pleasure with utility, espaliers are trained along the back of the flower borders to prevent the vegetables being seen. When the espalier is fastened to a wall, as it is very common on the Continent, peach and nectarine trees are frequently trained upon it; but where it is detached, as it is most commonly in Britain, apples and pears, and sometimes gooseberries, are the plants which are cultivated in this way. Plums and cherries are occasionally so managed, but not so advantageously as the others.

When a common espalier is to be covered, the trees should be planted from 20 to 24 feet apart, which will allow the training, over the 12 feet. It is rarely employed, and suitable time would elapse before they would fill this space, a duplicate tree may be planted between each, and cut away as the others grow. Gooseberries of course require a small space; three or four feet from plant to plant is sufficient. The branches should be very slightly bent and easily formed. When the trees are young, one shoot must be trained perpendicularly, and two others horizontally, one from each side; the two last must not be shortened, but the perpendicular shoot is to be shortened in the following year to three-fourths of which are to form new side branches, and the other a leader as before; and so on every year until the trees have attained the desired size. The proper distance between the horizontal branches must depend upon the peculiar growth of the tree, but from six to nine inches is what is generally made use of. When the trees are trained upon a double espalier which has the advantage of giving two surfaces to train upon. It consists of two trellises instead of one, about two feet apart at the bottom, and approaching at the top in slowly curving lines.

The only kind of espalier worth notice, which differs from those now mentioned, is a table-rib: this, the management of which is called table training, consists of rails resembling tables, up the centre of which the tree is trained and regularly pruned, and has the essential fault of exposing the blossoms so much to the effect of nocturnal radiation that in this country a crop is rarely obtained from such espaliers.

The stakes which form the espalier are made of different materials, some of them of wood, and some of cast iron. The first of these is by far the most simple, and is composed of stakes, five or six feet in height, driven into the ground from one to two feet apart: along the top a bar, which is nailed to each, connects the whole together. It is customary when stakes of cast iron are used, as when the trees are first planted, because they are not required, are unsightly, and will have to be removed before the trees have attained their intended height: for this reason, stakes of a much weaker kind will at first answer quite as well. The wire and wood rail is formed by using vertical wires, stranded from two wooden horizontal rails, which are connected and held fast by wooden posts let into the ground. The iron rail is constructed upon the same plan as a table-rib.

The attention to all iron trellises is, that they cut and canker the trees; and when the cheapness of the wooden one is considered, besides the more natural appearance which it presents, it must undoubtedly have the preference.

The best wood for this purpose is yew larch, the thinning of plantations.

ESPALION, a town in the department of Aveyron, in France. It is on the left of the lower bank of the river Lot, 17 miles from Rodez, the capital of the department, and 339 from Paris by Fort-Marnel, Brive, Nerac, Moulins, Riom, Clermont, and St. Flour. The principal street of the town is broad, and lined with well-built houses: it leads down to the bridge over the Lot. The population in 1832 was 22,912, the town was 7,413 for the whole commune. The inhabitants manufacture light wooden stuffs, and there are several fine yards: morocco leather is manufactured. Good wine is produced in the country round Espalion. The town has a subordinate court of justice (tribunal de première instance), a school, and a dissenting-school.

The arrondissement of Espalion is divided into nine cantons or districts, under the jurisdiction of a justice of the peace, and 101 communes: it had in 1832 a population of 65,696.

ESPHITU SANTO. [Brazil, p. 336; Citha, p. 205.]

ESPRIT, a suburb of Bayonne. [Bayonne.]

ESPLANADE, the ground between the fortifications of a citadel and those of the town to which it belongs. It is recommended by writers on fortification that this space should be left out for a parade square, and that the covered way of the citadel, that in the event of an attack on the latter the enemy may not construct batteries within barricking distance under the cover afforded by the buildings of the town.

ESQUERRY-HILL [Rome.]

ESQUIMAUX, a nation inhabiting the most northern countries of America, and, if the extent of country be considered, one of the most widely-spread nations on the globe. On the eastern coast of America they are met with as far north as the island of Baffin. The most celebrated tribe is that which extends northwards over the Barren Lands to the Great Fish River, or Tlheewcoheshet, on both banks of which river they are found east of 106° E. long. The whole country between this river, the Great Bear Lake, and the Ottawa, is inhabited by them. The coast lying to the west of Mackenzie River is also in their possession: and they seem to be spread as far as Kotezane Sound, on Behring's Straits. They also occupy Greenland and all the other islands between the Labrador waste coast of America and the pole, as far as they are habitable.

In stature the Esquimaux are inferior to the generality of Europeans. A person is rarely seen who exceeds 5 feet in height. Their features are thin, and the round form as those of Europeans; their cheekbones are high, their cheeks round and plump, mouth large, and lips thick. The nose is small, and, according to some authors, flat, which, however, is denied by others. Their eyes are small, whether it be of dark or blue shade. The nostrils are of a dark chestnut colour: they appear very small and deeply seated, owing to the eye-beds being much encumbered with fat. The hair is uniformly long, lank, and of a jet black colour. The ears are situated far back on the head, and are large and flat. The forehead is high, and shoulders very broad. Their hands and feet are remarkably small; there is, however, no sudden diminution, both extremities appearing to taper from above downwards in a wedge-like shape. Grant, in his Voyage to Greenland, says that he has seen Esquimaux with hands and feet having disproportionately large hands and feet. They are of a deep tawny or rather copper-coloured complexion. They are not without beard, as it has been asserted, but they pluck it out as soon as it appears. Some of them even wear long beards. They show a great deal of ingenuity in making their dresses and instruments; and some of them have attracted the attention of our travellers by their display of mental powers.

Their language is different from that spoken by the other savage nations who inhabit North America; but it seems that the same language is spoken by all the different tribes of the Esquimaux, though of course each of them has expressions which are peculiar. (Parry; Mac Keever; Grace; of Greenland.)

ESQUIRE (from the French, éveur, or shield bearer) is the next title of dignity to that of knight. The esquire was the second in rank of the aspirants to chivalry, or knighthood, and had his name from carrying the shield of the knight, whose banner, or heraldic in arms, he was. The gradations of this service, of which there were degrees, were: page, esquire or bachelor, and knight, who, in his turn, after the elevation of the knight, was called a knight bachelor, as aspiring to the higher honours of knighthood. The title was generally given to a gentleman, and he had the right of bearing arms on his escutcheon or shield; he had
also the right of bearing a sword, which denoted novelty or chivalry; though it was not girded by the knihtly belt; he had also a particular species of defensive armour which was distinguished from the full panoply of the knight. So much for the esquire of chivalry, which order is only preserved in the almost obsolete esquires for the king's body, whom antiquaries have pronounced to be the king's esquires in chivalry (that is, his esquires, as being a knight), and to rank as the latter.

There was also another class, who may be called feudal esquires, and consisted of those tenants by knight's service who had a right to claim knighthood, but had never been dubbed. They were in Germany called ritters, or knights, but were not so called in England, though they were called dubbed knights, or Ritter Geschlagen, and had many of the privileges of knighthood. This distinction still exists in many of the countries which formed part of the German empire. In Hainault, Brabant, and other provinces of what was ancient Flanders, and in a few other parts of the kingdom, as they are called in England, to this day are styled collectively the Ordre Equestre, or knightly order. It also existed in England until James the First had prosecuted the honour of knighthood, for Camden frequently speaks of knights feudal and lordly, and land-maker esquires, under whose heads they were not, at the time, actual knights.

Writers on precedence make mention of esquires by creation, with investiture of a silver collar or chain of office, and silver spurs; but those seem to have been only the ancient esquires for the king's body, which being preserved in a family as heir looms, descended with the title of esquire to the oldest sons in succession. The sons of younger sons of dukes and marquises, the younger sons of earls, viscounts, and baronets, and the eldest sons of the eldest sons of esquires, and kind of knights of all the orders, are all said to be esquires by birth, though their precedence, which differs widely, is regulated by the rank of their respective ancestors. Officers of the king's court and household, and of his navy and army, down to our times, inclusive, doctors of law, barristers, and physicians, are reputed esquires. A justice of the peace is only an esquire during the time that he is in the commission of the peace, but a sheriff of a county is an esquire for life. The general assizes, and the population of the british empire, are entitled to it, it has virtually destroyed it as a distinct title or dignity. The heads of many old families are, however, still deemed esquires by prescription.

ESSAYISTS, BRITISH. This title is customarily confined to a certain class of periodical writers upon subjects of general interest, as morals, criticism, manners, &c. The notion of a series of papers fit for general circulation, and not including news or politics, was originated by Steele and Addison in the 'Tatler.' [Anison.] The 'Freelohder,' 'Cato,' and 'The Spectator' were rather political pamphlets than essays in this sense of the word; and an interval of thirty-five years elapsed from the end of the 'Spectator' to the successful revival of this style of writing by Dr. Johnson, in the 'Rambler,' in 1750. Its influence was so great that the population of a number of similar periodicals during the latter half of the eighteenth century, since which time they have again gone out of fashion. We give a list of those contained in Alexander Chalmers's collective edition of British Essays, which includes many of the best, and are among the standard works of our language; with the names of the principal and most celebrated contributors to each.

'Tatler'—Steele, Addison.

'Spectator'—Addison, Steele, Budgell, Pope, &c.

'Satyrical'—Steele, Addison, Berkeley, Poyto, Tickell, Gay, &c.

'Rambler'—Johnson, almost entirely.

'Adventurer'—Hawkesworth, Johnson, Jos. Wattson, &c.

'Occasional Poets'—Moore, Lord Chesterfield, Horace Walpole, J. Warton, &c.

'Connoisseur'—G. Colman and Bonnel Thornton chiefly.

'Coffin'—Johnson; a few by Warton and others.

'Mirror'—Henry Mackenzie and others.

'Lingerer'—The same.

'Observer'—Richard Cumberland, almost entirely.

'Olla Podrida'—Moore, &c.

'Microcosm'—Cunning, Frere, Smith, &c.

'EESK. ESSAYIST.'—Keno, or OZEN, the chief town of the circle of Essex, and the capital of Austrian Schonau, is a royal free town situated in a level and marshy district on the right bank of the Drave, a little to the west of its efflux into the Danube. It lies in 45° 34' N. lat., and 18° 42' E. long. It was founded in the year 1273 by the emperor Hadrianus, and afterwards became the residence of the Roman governors of Lower Pannonia. Constantine made it the seat of a bishopric in the year 333. It now consists of four quarters; the present town is in the east; the suburbs, begun in 1708, are on the west. It was finished in 1719, is well built, contains 147 handsome and lofty houses, an arsenal and barrack, and is regularly fortified: an esplanade runs round it, and to the north-west of it stands the Pelos-Varos (Upper Town), which is supplied with water by an aqueduct recently finished, which is the residence of the merchants and dealers, and has well-attended fairs. South-east of the fortress lies the Also-Varos, or Lower Town, the site of the antient Murus, which consists of broad and handsome streets, and has some fine churches; and in the east of the town, and to west and gardens than of lines of streets. The fortress and suburbs contain altogether about 1800 houses, 5 Roman Catholic churches, 4 chapels, and a church for those of the Greek persuasion, and 11,200 inhabitants. There are several inns, is supposed to be the first place of the church, and the house of assembly for the states of Verocca, the county in which Essek is situated, the barracks, engineers' house, officers' pavilion, and arsenal. Essek has a Roman Catholic high-school, a gymnasium, a Greek school, a military cadet academy, and one for boys, and a hospital. It has a causeway or bridge about two miles and a half in length, 55 feet in breadth, and 9 feet in height, constructed in the year 1712, heads across the Drave and the swamps on its western bank into the Hungarian county of Baranya. With the exception of the fortress and townhouse there is a little mechanical industry in the town. There is a considerable trade in grain, cattle, and raw hides.
essences being called the genus, and that which is peculiar to one particular essence, distinguishing it from all others and constituting it what it is, being called the differentia. The whole essence is called the species; that is, genus and differentia together. The qualities joined to essence are also of two kinds: those which are joined necessarily are called properties, and those which are joined only contingently are called accidents. Hence the five predicables, or only possible qualities of a thing, are the following:—

1. Species or whole essence. 2. Genus, the common or material part of the essence. 3. Differentia, the peculiar or formal part of the essence. 4. Property or quality, necessarily joined to the essence. 5. Accident, or quality contingently joined to the essence. Collecting Locke's views on this doctrine of essence,Locke observes that we classify things by their nominal essences, having no other measure of essence and species but our abstract general ideas, and that all reference is lost, which we cannot intelligibly speak of essential and specific difference. The doctrine of the immutability and ineradicable incorruptible nature of essences can be founded, says Locke, only on the relation between abstract ideas and the sounds which they actually represent; and the same name retains the same signification, and also on the truth that, whatever may become of individuals, as Alexander and Cleopatra, the ideas of men and horse remain unaltered. Some of these relations, as that real essences are founded on abstract ideas, and mere abstract ideas are sometimes merely nominal, are disputed in Green's Philosophy and in the Leibniz's work against Locke. (See also many of the earlier scholastics; and for an exposition of the doctrine of essence, according to the transcendental theory, see Kant's "Kritik der Urteilsfähigkeit"). Metaphysics, in the "Encyclopædia Londinensia."}

Substance, as distinguished from essence, is understood to mean all the essential, with the accidental qualities; and essence (genus and differentia, or common and proper) the essential quality only, that is, the substance of the metaphysical substratum. The Greek word ῥήσις (ρήσις) has many significations applicable to the individual, genus, species, and subject (Aristotle, Metaphys. 1, 6. c. 3); on which it is argued by Roy Mead in his "Tract on the Nature of Subst. 1826, p. 149. 246), that while the Latin and all modern languages have two distinct expressions for essence and substance, it is surprising that the Greek, which is otherwise so rich, had only one name (ρήσις) for these two ideas, and that the word ῥήσις was subsequently employed, but with similar duplicity and confusion. Hence arose many of the Trinitarian controversies, or rather logomachies, which embroiled the first ages of the church; for Athanasius, Epiphanius, and most of the other Greek fathers understood ρήσις as a person or mode of being, as meaning the same thing as θεότης, substance; and Sabellius, Arius, Nestorius, and Eutyches understood θεότης as signifying the same thing as ρήσις, that is, essence or nature. So that Sabellius said, there is one essence or nature in God, therefore one substance or person. There are three substances or persons in God,
said Arius, therefore three essences or natures. There are two essences or natures in Christ, said Nestorius, therefore two substances or persons. There is but one substance or person in Christ, said Eutyches, therefore but one essence or nature. The essay on the difference between οὐσία and ῥήσις, essence and substance, which is often attributed to St. Gregory, appears to belong rather to St. Basil: at least it is contained in his 43rd epistle. The epithet essence is applied to the phenomena, the substances; the nature, to the objects of which it is applied. It is evident that without which it could not be what it is; and the name essence, as the essentials of logic, signifies those parts alone which are valid for general or particular uses.
and Southend, the coast rises into low cliffs. At Shoebury Ness, a low point of land at the mouth of the Thames, 6 miles north of the tip of Canvey Island, where the coast turns to the north-east, the marshes reappear; and with an interval of about a mile just beyond Shoebury, they continue along the coast 11 miles, to the mouth of the river Crouch. Nearly 4 miles from Shoebury a narrow creek, where many small, irregular inlets of the river Crouch, which cut off from the mainland several low flat islands, Russelys, Haven Gore, New England, Potten, Wallasea, and Foulness.

The edge of this creek and its various ramifications, as well as the Broomhill and Canvey Creeks, which run into it, are embanked, and the islands are embanked all round. The marshy tract, including the islands and the adjacent part of the mainland, is from 3 to nearly 6 miles broad; and the sand (Foulness Sand), dry at low water, with the water rising to 3 feet, separates the Blackwater River (having widened from a quarter of a mile at Hole Haven) from Foulness Island 4 miles broad; there is a road along this sand from Kenneth’s Head, near Shoebury, almost to the north-eastern end of Foulness Island. From the mouth of the creek to the point where offices are held for the drainage, the breadth is nearly 3 miles; and the channel, called Wallasea creek, is 900 ft. wide, with a gradient of 1 in 150.

Foulness Island (so called from the Saxon Fugel, a fowl, and naye, a promontory, the Promontory of Fowle) is bounded on the north by the river Crouch, on the south by the Blackwater River, which separates it from Wallasea Island, and on the south-west by a creek which communicates between this river and the sea and separates Foulness from Potten Island, and which is 3 miles in length, with a breadth of nearly 3 miles, and a depth of water of 6 feet; its greatest breadth is 2 miles. Its area is given by Morant at 4500 acres, and in the "Life of Useful Knowledge" at 3000; but in the Population Returns, Foulness parish, which does not, so far as we know, contain more than the island, is given at 6300 acres, with a population of 630, almost entirely agricultural. The soil is good, the upper part producing corn of every kind, and the lower part pasture; the only fences are ditches, which are filled at every tide. Fruit-trees thrive well.

The water and the blackwater rise to nearly 3 feet above the sea. The houses are scattered over the island, upon the different farms; they are all of wood—a material which, from some cause or other, is here liable to rapid decay. The church, also of wood, is situated near the centre of the island; it is held for the small parish called Wallasea, except from the archdeacon’s jurisdiction, of the yearly value of 300L, with a glebe-house. There is a yearly fair in the island. Beds of oyster and cockle-shells have been found beneath the surface of this island, which renders it probable that it was originally an island. The same is the case with Canvey, which is separated from Foulness and Potten Islands, and which is 2 miles in length and 1 mile wide, and about 900 ft. in breadth, with a gradient of 1 in 150, with the exception of the north-west end, where it is 1 in 100.

Wallasea, otherwise Wallet or Wallia, so named from the sea-walls which surround it, is bounded on the north by the river Crouch, on the east and south by the Broomhill River, which separates it from Foulness and Potten Islands, and on the west by the Blackwater Creek, which separates it from the mainland. There is a causeway over Paglesham Creek. Its greatest length is, from east to west, 34 miles; its greatest breadth is 16 miles. The water is too salt to be fit for kitchen use, and the inhabitants have to fetch fresh water from the mainland. In the pond’s is a brackish that horses do not thrive till they have been inured to it. The whole island is marshland; it is included in several parishes. The Potten Island, Gore, New England, and Russelys or Roushey, belong to the same group as the two foregoing; they are to the south-west of Foulness and to the south of Wallasea. The whole group is in Rochford hundred. In the creeks which surround or separate these islands there is held for the small parish called Wallasea, except from the archdeacon’s jurisdiction, of the yearly value of 300L, with a glebe-house. The island is divided into two parishes of East and West Mersey or Morses, of which the former comprises an area of 1810 acres, with a population in 1831, of 300; the latter an area of 3020 acres, with a population of 847— altogether, 4930 acres and 1147 inhabitants. There is a parish church from the island, but the services are performed by the curate of the Colne. There is a parsonage house on the mainland, a house in the centre of the island, 3 miles away from the church, and 2 miles away from the boundary of the island. The island is, on the north side, altogether 3 miles long and a half; it is 1 mile and 400 yards wide, and is bounded on three sides by the sea, and on all other sides by a creek, which, running through the marshes on its north-west side, under the names of Mersey Channel or Pyefleet Channel, separates it from the mainland; a portion of it is enclosed by the coast, and is 4 miles by 2 miles. This island is 3 miles from the coast.

The islands have been named in the course of the foregoing description of the coast: we subjoin a few particulars of the chief of them.

Convey Island is bounded on the south-west and west by Hole Haven, and on the north by a narrow creek, which separates it from the mainland. It is entirely marsh-land, and its extreme length from east to west is 6 miles; its greatest breadth from north to south is 2 miles. Its area is estimated at more than 2600 acres (Lib. of Useful Knowledge: Geography), chiefly appropriated to grazing sheep and cattle; or 3600 acres (Morant’s Hist. of Essex). It is crossed by a narrow channel, which separates it from the village of South Benfleet. It does not form a distinct parishes, but pays tithes and rates to several parishes. From being comprehended in so many parishes, its population cannot be ascertained from the population returns; in 1746 there were 56 households.

Morant, in his History of Essex, states that there were then (1676) fifty dwellings in the island. In 1662, the land being subject to overflowed at high water in the spring tides, the owners of lands in the island entered into an agreement with Lord Byron for a dyke, which being built, the island was recovered, as Morant terms it. A timber chapel was built for the use of the Dutchmen employed in the island. This chapel has been twice rebuilt; the present chapel will hold 116 persons. The value of the perpetual curacy, to which several endowments are attached, is 50L. It is in the gift of the bishop of London. There is a yearly fair on the island.
east; the coast and the banks of the Thames present a succession of unhealthy marshes commonly known as the Hundred of Romney. The north-west side of Epping Forest, near Waltham Abbey (390 feet high), Lasdon hill, south of Billericay (620 feet high), Danbury hill, between Chelmsford and Maldon, of nearly the same height, and Tiptree Heath near Witham, are probably the highest points in this part of the county. The Colne forms the continuation of the Chiltern hills just across the north-western part of the county in their extension towards the north-east.

The rivers of Essex are—the Thames with its affluent, the Lea (which flows the Stort), the Roding, the Bourne Brook, the Ingerburn, and some smaller streams; the Crouch with its affluent the Broom-hill; the Blackwater with its affluent the Pod Brook or Witham river; and the Colne (into which flow the Sandon Brook, the Ter, and some other streams). The Colne with its affluent the Roman and the Stour; and the Granta or Cam.

The Thames bounds the county on the south side. Its course, though winding, is on the whole nearly from west to east. It is a tide river, and navigable for the largest merchant ships (that is, for the navigation of the first class, 1600 tons burden), and for frigates and other smaller ships of war throughout that part of its course which belongs to this county. The mouth of the Thames contains numerous shoals.

The Lea bounds the county on part of its west side. It more properly belongs to Hertfordshire, in which it has a considerable part of its course. It meets the border of Essex at the point where it receives the Stort, along which the boundary is nearly parallel and flows for about 6 miles (Harehills, Waltham Abbey, Chingford, Layton, and Stratford (all in Essex), 20 miles, into the Thames. The banks of this river are marshy; and the marshes are from half a mile to a mile wide. The stream is frequently divided and flows in several channels, and in some places cuts have been made in order to improve or shorten the navigation, which comprehends all that part of the river connected with this county. Some of the acts of parliament relating to the navigation of this river are above 400 years old.

At Loughton near the Lea, Essex enters Hertfordshire, through which it flows for some miles, and then touches the border again, and flows sometimes on the border, sometimes in Hertfordshire, into the Lea. Its whole course is about 24 miles, for about 10 miles of which it has been made navigable. The navigation of the first class, (1600 tons burden) and for frigates and other smaller ships of war throughout that part of its course which belongs to this county.

The Blackwater, which in the upper part of its course is called the Pant, rises near the village of Wimblesh, three or four miles from Saffron Walden, in the north-western part of the county. It flows first south-east and then south about 10 miles, after which it turns west and flows into the Witham, and then to Thorndon Park near Brentwood, falls into the Thames near Purfleet.

The Crouch rises on the slope of the hills, south of Billericay, and flows east by north about 25 miles into the sea; passing the villages of Ramsden Essex, Witham, and much lower down, the village of Burnham. The tide flows about 13 miles up the river and is kept from overflowing the low lands on its banks by mounds. In the tide-way there are many arms; and the various channels by which the river communicates with the sea form the group of Foulness, Wallasea, and the adjacent islands. Just above its mouth it receives the Broom-hill river (10 miles long), which is navigable for seven miles nearly up to Rochford.

The Colne rises near Debden, two or three miles south of the sources of the Blackwater, and flows south-south-east about 23 or 24 miles to the town of Chelmsford, passing Chelmsford, Tiptree, Great Easton, Dunmow, Great Waltham, and Lower Roadford, into the River Thames at the Arkel, near the Lea. The Colne rises near the village of Sandon, which rises near Thorndon Park and flows northward between Billericay and Ingatestone to Widford and Writtle, and then turns east and runs into the Chelmer after a course of about 10 miles. The Blackwater and Colne flow east about 10 miles till it falls into the Thames near Malden. Its whole course is about 34 miles. The Sandon Brook, which rises near Stock, two miles north-east of Billericay, and has a course of about 10 miles, joins the Chelmer between Chelmsford and Maldon. The Ter rises between Felsted on the Chelmer and Rayne on the Pods Brook, and flows south-east 13 or 14 miles into the Chelmer, which it joins about two miles below the junction of the Sandon Brook. It passes Littlegoys, Great Leighs, Terling, and Blackmore before it joins the Chelmer; its whole course is about 34 miles. The Colne.

The Colne rises in the north-western part of the county, between Great Sampford on the Pant, and Steeple Bumpstead on the Stour. It flows east about 7 miles to the neighbourhood of Great Yeldham, where it is joined by other branches of the Colne, running from the west. In the course of 6 miles on its easternmost course, the Colne flows south-east 6 miles past Castle Hedingham and Sible Hedingham to Halstead; and from thence east-south-east about 13 miles to Colchester. Below Colchester it becomes a tidal water and flows 6 or 9 miles south-east into the sea at the north-eastern point of Mersea Island. Its whole course is about 33 miles.

The Roman road lies about 2 miles north of Coggeshall on the Blackwater, and flows east by south about 13 miles into the Colne, through which it joins midway between Colchester and the sea. A branch of this road is about 15 miles long from Layer Marney and Layer Breton joins the Roman about three miles above its junction with the Colne.
The Stour may be considered as equally belonging to Suffolk and Essex. Of the three springs which may claim to be its sources, one which flows past the village of Keddington is in Suffolk; a second in Cambridgeshire, and from it a stream, known as the river Colne, runs northward through the county of Essex, and the stream from it passes Steeple Bumpstead. From the junction of these three streams, which takes place about 8 or 9 miles from its respective sources, the river, to its outlet divides the counties of Essex and Suffolk. Its course is first east about 10 miles past Wixoe, Stoke, Clare, and Cavendish in Suffolk, to the neighbourhood of Long Melford, above which it receives two small tributaries on the Suffolk bank; from thence its course is south east by about 6 miles past Sudbury in Suffolk to Bures; and from thence, east 13 miles past Norfolk, in Suffolk (below which it receives two considerable affluents), and Dedham in Essex to Catawade bridge, just above Manningtree. Below Catawade bridge the stream widens into a considerable estuary, 11 or 12 miles long, and for the most part above a mile wide, which unites with the estuary of the Orwell, a Suffolk river, and passes into the open sea between Harwich and Languard Fort. Its whole course is about 50 miles. Manningtree, Mistley, Wrabness, and Harwich are on the Essex bank of this estuary.

The Cam rises near Debden, 4 miles from Saffron Walden, and flows first south-west for 2 miles, and then turns north and flows about 8 or 9 miles past Newport, Audley Park, Littlebury, and Little and Great Chesterford, into Cambridge-shire.

The Thames and the Lea are navigable throughout that part of their course which belongs to this county; the Stort is navigable from Bishop Stortford to its junction with the Lea; and it has been projected and sets of parliament obtained for the navigation of the whole of 8 miles, from Bishop Stortford along the valley of the Cam to the navigable part of that river below Cambridge, thus uniting the Thames and the Lea with the Cam and the Ouse. The tideway of the Crouch is navigable, and serves for the important exportation of the coal, timber, and groceries, and serves for the exportation of agricultural produce. Near Burnham this river is a quarter of a mile wide (not three quarters of a mile, as Mr. Young states in his 'Agricultural Survey'), and has depth of water sufficient for a 50-gun ship; a 74 might go almost up to Hulle at the head of the tideway. The Blackwater does not appear to be navigable above the junction of the Colne.

Vessels of considerable burden can get up to Maldon at spring tides. The Colne is navigable to Chelmsford. This navigation supplies Chelmsford and other places on the north for the most part with coal, timber, and groceries, and serves for the exportation of agricultural produce. The navigation of the Colne, which extends to Colchester, answers the same purposes for that town and neighbouring. The river Stour is navigable up to Manningtree, about 30 miles above Harwich. Essex has no navigable canals.

The principal roads in the county are the three roads from London to Norwich, by Ipswich, Bury, and by Newmarket. The road by Ipswich enters the county at Bow bridge, about three miles from Whitechapel church, London, and crosses the county in nearly its greatest extent from south-west to north-east, passing through the market towns of Romford (12 miles from London), Chelmsford (30 miles from London), Waltham (36 miles), and Colchester (41 miles), 72 miles between which the road crosses the Stour at Stratford bridge and enters Suffolk. The road through Bury branches off from the Ipswich road at Chelmsford, and passes through the towns of Braintree (404 miles from London), Harwich, and Frinton, which, besides the several branches made off to the coast, and to the principal places of the county, have other roads through Ottery, Danwich, and Dunmow, and is thus rather longer than the principal line. The road by Newmarket branches off from the Ipswich road a little beyond Bow bridge, crosses part of Epping Forest, and runs through the town of Epping (17 miles from London), about 7 miles beyond the breasted part of the course below which the road crosses the Stour into the county of Suffolk. A branch from this road passes through the villages of Shille Hedingham, and Castle Hedingham, instead of through Halsted, and reunites with the main road at a distance of 6 miles beyond the town of Halsted, rather rather than the principal line. The road by Newmarket branches off from the Ipswich road a little beyond Bow bridge, crosses part of Epping Forest, and runs through the town of Epping (17 miles from London), about 7 miles beyond the breasted part of the course below which the road crosses the Stour into the county of Suffolk. A branch from this road passes through the villages of Shille Hedingham, and Castle Hedingham, instead of through Halsted, and reunites with the main road at a distance of 6 miles beyond the town of Halsted, rather rather than the principal line.
surface of the vegetable mould does not commonly rest immediately on the London clay, but on alluvial beds of rich man and beam, which often alternate with gravel and sand, and sometimes have a thickness of 30 or 40 feet.

The sands and clays of the plastic clay formation skirt the district, and thin out on the coast. Harwich, and Canvey Island, with the intermediate tract, are both on the plastic clay. The border of Essex, near Hadleigh, is the most northerly point at which this formation has been found.

The north-western extremity of the county, about Safron Watton, consists of chalk: the great chalk district, in its extension from southwest to northeast, just crosses that part of the county. The chalk appears also at Purfleet and Gray's Thorne, on the banks of the Thames. At the former place is an extensive chalk-pit belonging to Mr. Whitbread. At the latter it has been said that the chalk has been discovered in thin layers in the Thames. A subterranean forest underlies the marshes on the banks of the Thames.

Agriculture. The climate of Essex is favourable to vegetation: the sea and the numerous estuaries which bound it on the south and east soften the rigour of winter, and keep up a certain degree of moisture in summer. The same cause, however, produces cold frosts and exhalations in spring and autumn, which are very prejudicial to the health of those who are not used to the climate. In consequence of this, and of the great fertility of the country, which lies along the Thames and the sea coast, towards the Colne river, and which are usually called the hundreds of Essex, contain few seats of men of fortune; and notwithstanding the richness of the soil, and the great expense of the cultivation of land, few of the other counties venture to take farms in this part of Essex. This repose to the climate of the hundreds of Essex is rapidly diminishing, since the marshes have been better drained and the woods, which prevented the free circulation of the air and the drainage of the fogs, have been gradually cut down, and the land brought into cultivation. The soil all along the coast, and 10 or 12 miles inland, is of a very excellent quality, being a friable loam of greater or less tenacity in different parts, but peculiarly adapted to cultivation.

The Isle of Mersey, which lies at the mouth of the Colne river, has been long noted for the fertility of its soil, which is a fine alluvial mass composed of the various earths deposited from the river and the sea, like the gyres of the sun, in the river, or the tides of the Netherlands. The whole island is protected by a sea-wall, and produces every kind of grain which is usually cultivated; wheat, barley, oats, beans, and rape seed are the principal produce. Sir Humphry Davy found that the soil had been washed from the north and the west, and that its position from the atmosphere in less time than any other on which the experiment was tried; and this gives perhaps a better measure of fertility than any chemical analysis of its constituent parts. The best soils of Essex lie low, and are protected from the wind by banks or dikes; these are by many men considered to be the most fertile. Many marshes which formerly produced nothing but herbage, and were subject to inundations, are now converted into arable fields; and a great tract of land along the east coast, which used to be covered by the sea at high tides, is now laid dry land, through the deep and broad ditches, here called fleets, and protected by high and well-constructed sea-walls, the repairs of which are a great expense to the proprietors. In some of these marshes the want of fresh water in summer was often felt severely. But the situation of Essex has been hitherto an advantage, which has been attended with great success, especially in the marshes at St. Osyth, where the finest springs of water have been found, which flow over the surface, and keep ample reservoirs continually full. The depth at which the water was found there exceeded fifty feet. This discovery greatly increases the value of these marshes in dry summers, such as that of 1836. The soil in the uplands along the coast consists chiefly of good loams varying in tenacity from a strong clay to a light gravel; most of it is of such a nature as to bear both turnips and hay, and beans and vegetables, as well as the highest, which form the two extremes, are more inland. The whole county has an undulating surface, which is very pleasing when fields and woods are interspersed, as is very generally the case in this county. The only level tract is that along the Thames, which extends to its mouth and along part of the south-eastern coast. The remainder consists of gentle elevations just sufficient to give a great variety of soil and aspect. The clay soils, on the whole, prevail in most parts of the county, and from this circumstance arises the modes of cultivation and the rotations of crops which are most commonly adopted. There are very few such light soils in Essex as those which are in Norfolk and Lincolnshire, and except those of the borders of Hertfordshire and Cambridgeshire, chalk and marl are rare.

The cold wet clays have given rise to a mode of tillage which is minutely described by Arthur Young in his View of the Agriculture of this County, and of the production and pattern for the cultivation of cold wet clays. It consists of repeated ploughings in spring and summer, and exposure to frost in winter; two things, no doubt, highly beneficial to stiff land. But since the introduction of extensive under-draining and high manuring, much of the cold wet clays in ploughing, and on the Purlieus method, on stiff clays, was to work the fallows two winters for barley, during which period the land was ploughed in all directions eight or nine times, and even now, until it was sufficiently pulverized. The rotation was fallow; barley; fallow; wheat; beans: that is to say, in five years. The beens were frequently omitted; so that the land was alternately cropped and fallowed. No stock was kept on the farm, but a few cows for the use of the family, and a horse and a cow for carting the drudgery through the ground; and the soil not being favourable for artificial manuring, the proprietor would retire, and the manure could be made except upon those farms which have marshes attached to them, which is not generally the case where the soil is the stiffest. There was consequently a sufficient manure for the land, and farmers were unadvised to keep the soil in a moderate state of fertility. From sixteen to twenty bushels of wheat per acre, and from twenty-four to thirty of barley, was a common average produce on very good clays, which, with under-draining and proper manuring, increased to two of wheat and forty-eight of barley. The fallows at the same time are now reduced to every fifth or sixth year.

The present mode of ploughing in Essex is similar to that of Norfolk and Suffolk; the ploughs most commonly in use are those of the plough-cart or swing-ploughs without wheels. The great manuring which is usual is that of Messrs. Ranson, at Ipswich, which chiefly supplies the three eastern counties. In good clays, not too stiff, two horses are driven abreast with reins, whether the plough has wheels or not. In heavy wet clays three horses are used, who walk one before the other in the furrow. The object is that they may treat the land less; but some very judicious agriculturists maintain that three horses treating the bottom of the furrow render it quite impermeable, and do more harm than if they had walked abreast over the land abreast. But these farmers only have trod in small cavities. This is rather a new mode of viewing the subject, but it is worth considering, and making trials to ascertain the real effect.

The strips of land generally enclosed in, and before winter the field is laid out by narrow ridges which are formed by two turns of the plough, and sometimes by four turns, or two bouts, as they are called. The ploughmen are expert in this, and lay the ridges very regularly, sometimes diagonally across the field. "The furrow has a good effect in dividing the soil more completely. In this form a greater surface is exposed to the frost and air, and in spring it is mellow and crumbling, where in autumn it rose in an unbroken furrow. If a fallow is intended to clean the land, it is ploughed with the ridge-furrow, leaving the rich soil in which the furrow turns the usual rotation is turnips, barley, clover, wheat, beans, oats, or wheat. The manure is put on for the turnips and the beans: peas and tares are taken on part of the land, which otherwise would have had clover, and on that where the clover has failed. The mode plough has been used with good effect in many stiff soils, but the tradition of the horses when the ground is soft, the only
time when the mole plough can be used with effect, does a great deal of harm on such land, so that this instrument is not so generally used as it might be. The method of driving a mole plough is to place it close of the mole plough, that this instrument will soon be laid aside, except in old pastures, where it may sometimes save the expense of draining. The subsoil plough is not yet generally introduced, but will, no doubt, soon be found an indispensable implement. Mangel is a kind of grass which has been more extensively practised by all good farmers in Essex, whether of strong or light loams. In sandy and gravelly soils sheeps may be more profitable; but where turnips, especially the Swedish, or mangel wurzel can be raised, on heavy soils, the turnip is the chief crop, and give things in the cattle in yards or stalls, together with straw and oil-cake. When the soil will not allow the carts to go over the fields where the turnips are without doing harm in winter, asses with panniers are used to bring the turnips to a cart on the hard road, or in order to the field, if it is near at hand. Asses and boys may be employed in this manner with advantage in many situations, and the expense will not exceed that of horses and carts, although they bring but a small load at a time.

In those farms which have marshes attached to them a great number of cattle is constantly kept, and all the straw is converted into manure, by which the arable land is kept in a high state of fertility. Along the Thames the salt marshes are extensive, and are profitable from the number of acres which they cover. Whit and black, and have shipped, they have been over worked and require rest, or when they have met with some accident. Where there is not a sufficient number of horses taken in to stock the marshes, oxen and sheep are bought to complete the number, but the same state of the land which is usual.

Besides the common crops usually cultivated, a considerable quantity of cole or rape seed is raised on the richer alluvial soils of the buncheads. It is a profitable crop, owing to the abundant supply of manure brought from London by the Thames, and in other situations it has been found to deteriorate the succeeding crops too much, and the cultivation has been abandoned. Flax is not cultivated anywhere in the county, at least to any extent, and very little hemp is sown. A few hops are raised in the western part of the county, towards Cambridge. The cultivation of this plant is spreading rapidly, and every year some new hop gardens are formed. The extent of hop ground is however inconsiderable, when compared with that in the hop-growing counties of Kent, Surrey, Hertfordshire, &c. The cultivation of hops in Essex is perhaps more practical to this county, is described under CARAWAY.

In that part of Essex which lies within a few miles of London the cultivation of the soil partakes more of the garden culture. Vegetables, especially cabbages, are raised in such an extent as almost to make the county entirely devoted to the raising of potatoes. The ground is roughed, and very highly manured with stable dung from London. The potatoes are usually set by hand, and moulded up with the plough. They are taken up with the common three-pronged fork, and being immediately sown after the principal crop is taken up. Those which are of an early kind, and taken up in June or July, are followed by cabbages. Mangel wurzel for the London cowmen are also raised in considerable quantities. The meadows within fifteen miles of London regularly supply hay, so that a farm is in a market with hay, and every cart brings back a load of dung.

The cows and horses in Essex are chiefly reared in Suffolk, and Scotland supplies the oxen and fatten. There are a few considerable dairies about Ipswich; but in general the number of cows kept on a farm is not considerable. Many calves are fattened, which are killed in the country, or go to Romford to be sold to London butchers.

Sheep are now kept in greater flocks by the Essex farmers than they were of late, and with considerable advantage. But the result of draining, the land has been made capable of being folded over even in winter. It is not a sheep-breeding county, although many fine lambs are reared; but they are generally brought from the breeders in Wiltshire or Somerset, in the late autumn, and are kept over the winter. The South-down breed is preferred in general; but there are also many improved Leicesters, and lately the Norfolk sheep have come into favour with some farmers, who think them hardy and profitable, and whose fences are in such a state as to repress their rambling propensities. There is no peculiar breed of horses. The Suffolk punches seem to be in general use for farm work, and it is scarcely possible to find a breed adapted for every kind of work. When crossed with a half-bred horse of some substance and action, a Suffolk mare produces admirable carriage horses. In the marshes a good many horses are bred of various kinds, chiefly for draught. Essex has been long noted for a superior breed of pigs, which has been produced and improved by crosses with foreign breeds, chiefly the Neapolitan, which has very little hair, and the Chinese. The common Essex pigs have long ears standing upright, and thick in their texture. The best breeds are those with black, and have small appendages of skin like a long teat, hanging from the neck, and small jaws. The most common Essex pigs, which are brought in great quantities to Smithfield market, are black and white, the head and rump being generally black, and the back and belly white. They fatten early, and make excellent small pork when fed on the refuse of the dairy. Lord Western's breed is in great respect, not only in Essex, but all over England.


Divisions. Towns. &c.—Essex is divided into twenty parts, of which fourteen are called hundreds, five half hundreds, and nine small hundreds. We subjoin a table of these divisions, with their situation, their respective areas, and population in 1831. We have distinguished by the letters (A) and (I) the half hundreds and the liberty.

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<th>Division</th>
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<th>Population</th>
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There is no city in Essex. There are nineteen market-towns: three of these are parliamentary boroughs; Colchester, on the Colne, population of the borough and liberty in 1831, 16,167; Harwich, at the mouth of the Stour, population in 1831, 4597; and Maldon, on the Pevensey marshes, population in 1831, 3931. Colchester, the county town, is on the Colne; population in 1831, 5435. Of these places, as well as of Barking, a market-town on the Roding (population of the town ward in 1831, 3404); of the whole parish, which includes Ilford, 60,363, an account is
given under their respective names. Of the other towns we subjoin an account.

Billerica is in the hundred of Bartable: it appears in an ancient record under the name Beleuce, which is probably a variation of the old word Bulegua or Banleuga (in French Banlieu), the territory or precint round a manor or borough. The town stands on an eminence on the road leading from London, through Brentwood, to Chelmsford. Some time past the market was considerable, but for a long time past it has been much decayed. The town has been much improved of late years by a number of good houses, and from its situation commands a beautiful prospect over the valley of the Thames.

It is in the parish of Great Burgersted or Bursted, the church of which is about a mile and a half or two miles south of the town. There is a chapel in Billericay, supposed to have been founded in the fourteenth century: the tower, which is surrounded by a square spire, is the only remaining part of the chapel; the rest of it is of modern origin. There are places of worship for Baptists, Independents, and Quakers.

The inhabitants of the parish of Great Bursted, in 1831, were 1775, of whom about two-fifths were engaged in agriculture. There is a weekly market on Tuesday. There are scarcely any manufactories. The living is a vicarage, with the chapel of Billericay annexed. By the Education Returns of 1833, there were in the parochial twenty-five, and the board schools 260 children, with 171 scholars. One of the day-schools, with 49 scholars, has a small endowment. There is a parish almshouse for poor women.

At Blunts-walls, near Billericay, are some earthworks, the remains of a rampart and ditch enclosing an area about four acres: within the area were some artificial mounds, now chiefly levelled. Some remains of Roman pottery, several Roman copper coins and two silver coins, one of Trajan and one of Adrian, have been found in the neighborhood.

Braintree is in the hundred of Hinckford, and on the north bank of Pod's Brook; it is on the high road from London to Norwich, through Bury, 404 miles from London and 114 from Chelmsford, the county town. Antiently the manor of Braintree was in the hands of the Bishop of Norwich. The town comprehended the neighbouring parish of Rayne as well as that of Braintree: part of the lands in it belonged to the bishops of London; it was alienated by Bishop Ridley at the time of the Reformation: the manor-house long since desolate, was an episcopal palace. The parish was dismembered from that of Rayne, of which it was previously a hamlet, about the time of John or Henry III., the former of whom constituted it a market-town. The growth of the place is to be ascribed to its situation on one of the high roads from London to the North, and the buildings of inns and lodging-houses for the reception of the numerous pilgrims to the shrines of St. Edmund at Bury, and our lady of Walsingham in Norfolk. At the Reformation this source of its prosperity failed; but the town, and the adm. court of the manor, still retain the greater part of the settlement of the Flemings who fled from the tyranny of the duke of Alba and established here the manufacture of bacon and other light woollens, which for some time constituted the staple manufacture of the place, and is still carried on, though not so greatly as formerly.

It will be desirable to consider, in connection with Braintree, the adjacent village of Bocking; for although Bocking Church and Church Street are a mile and a half from Braintree, and on the north-east bank of the Black Water, and Bocking Street is contiguous to Braintree, and the two form one continuous place, the main street of which covers two-thirds of the extent between Pod's Brook and the river Pant, and stretches about a mile. Bocking consists of two half-miles, containing some 700 persons, formed by the intersection of the road from Bishop's Stortford and Dunmow to Coggeshall and Colchester, with the Norwich road, and by the convergence at this point of by-roads from the surrounding villages: there are some back streets or lanes. The streets are inconveniently narrow; and many of the houses are of wood, and of considerable antiquity. The church is on the right at the entrance of the town from London; it is large, built chiefly of flint, and mostly in the perpendicular style of English architecture: the tower, at the west end, is of early English, and is surmounted by a lofty shingled spire of much later date. This church was enlarged in the time of Henry VIII., the expense of the alteration being partly defrayed by the sale of the lands of the priories or anchorish.

There are places of worship for Independents, Baptists, Quakers, and Methodists. Bocking Church is remote from the town: it is spacious and handsome, and chiefly in the perpendicular style; the tower is lofty and well designed. In a new public place, 300 feet in length, is an ancient church, formerly the parish church. Some coins, sepulchral urns, and other Roman antiquities, have been found.

The parliamentary returns for 1831 assign to the parish of Braintree an area of 1960 acres, 708 inhabited houses, and a population of 3422, about one-sixth agricultural: to that of Bocking an area of 3800 acres, 647 inhabited houses, and a population of 3128, about one-fourth agricultural, giving an aggregate of 6300 acres, 1335 houses, and 6550 inhabitants. The manufacture of woollens is of great importance, and is considered by some authors as one of the principal staple manufactures of the kingdom. It has been in a great degree superseded by that of silk and erape, which is carried on to a considerable extent. The market is on Wednesday for corn, eggs, poultry, and occasionally cattle and live-stock of all kinds. There are several fulling and corn mills on the Pant.

The living of Braintree is a vicarage, of the yearly value of 212l., with a glebe-house, in the archdeaconry of Middlesex: that of Bocking is a rectory, of the yearly value of 925l., with a glebe-house, in the peculiar jurisdiction of the Bishop of Norwich; but it had only a small glebe. The Church is in a dilapidated condition, or that of his commissary, who is Dean of Bocking.

There is at Bocking an almshouse or hospital, originally for seven poor people, but now divided into nine tenements, inhabited by scholars, at an annual rent of 7l., and an individual, who is the present occupant of the almshouse. The returns made to parliament show that there were in the two parishes in 1833 twelve day or boarding and day-schools (two of them with 255 to 275 scholars, endowed, and three others with 340 scholars, supported by subscriptions containing 815 to 833 scholars; one dame or infant school, with 60 or 70 scholars; and four Sunday-schools with 540 scholars.

Coggeshall is in Lexden hundred, on the northern bank of the river Blackwater, 44 miles from London by Harwich Road. The town, called Coggeshall, is situated where the road turns off from the Ipswich and Norwich road. It is sometimes called Great Coggeshall, to distinguish it from the adjacent hamlet of Little Coggeshall. This town has by some antiquaries been considered to be the Canzon of Antonius; and several Roman remains have been found in and about the town, but these are not deemed by others sufficient to prove anything more than that a Romish villa existed here. Morant, the historian of Essex, ascribes the origin of Coggeshall to an abbey, founded here in 1142 by Edward the Confessor, and granted to the monks of Guisborough. To this abbey succeeding princes granted various privileges, among which was that of holding a market weekly. The yearly revenue of the abbey at the dissolution was 298l. 6s. 3d. gross, or 251l. 2s. 6d. The town was formerly much engaged in the wool and cloth trade, and was particularly noted for a white baize of superior fabric, called Coggeshall Whites. The clothing trade has much declined for many years past.

The town is irregularly laid out, and the streets are narrow and ill paved. The church, at the north-eastern end of the town, is a spacious and handsome building in the Perpendicular style of English architecture: the windows, especially the east window, are large and handsome: there is a large square tower at the west end. A small part of the abbey church remained; containing 850 persons, formed by the intersection of three arches, originally built by King Stephen over a cut made to convey the water of the river nearer to the abbey. The abbey has some good plain lancet windows, and the interior contains some groined arches, with shafts; it is occupied as a farm-house. At Little Coggeshall, a hamlet of the town, half a mile south of it, said to have been once a distinct parishes, were formerly two churches, one of them built by the monks of the abbey for their own use, the other the parish church; the former has now been demolished; the latter, or what remains of it, is now used as a barn. There are meeting-houses for Independents, Baptists, Quakers, and Methodists.

By the returns of 1831, the parish comprehended an area of 3770 acres, and had 639 inhabited houses, with a population of 3227, about two-sevenths agricultural. The
silk manufacture has been introduced here, and constitutes the principal manufacture of the place; that of woollens has declined. Some of the inhabitants are engaged in toy manufactory, and there are places for corn, butter, eggs, and poultry, and occasionally live stock.

The living is a vicarage, of the yearly value of 215l. with a glebe house, in the archdeaconry of Colchester.

There are three unenclosed almshouses near the church, and an almshouse valued at £250 10s. 8d. p.a. for the poor of 1833 assign to Coggeshall eleven day, or boarding day, or evening schools, one endowed and one Lancasterian, with 294 scholars; thirteen dame or infant schools with 165 scholars; and six Sunday-schools with 490 scholars.

Dunmow, or Great Dunmow, is Dunmow hundred, on the south-west bank of the river Chelmer, 38 miles from London by Epping, Harlow, and Hatfield Broad Oak; 404 by Chigwell, Abridge, and Ongar; and 42 by Chelmsford, Great Waltham, and Barnston. Great Dunmow is conspired by some antiquaries to have been the Roman station Castrumomus, which others fix near Wiford, two miles south-west of Chelmsford. A number of Roman coins, of different emperors, have been found here. It is on a Roman road, crossing the county from west to east from Hertford to Colchester.

Dunmow is pleasantly situated on an eminence, and consists principally of two streets. The market-cross in the centre of the town was erected in 1578, and repaired in 1761. The church stands a considerable distance from the town (1,484 feet), with 390 sittings and 317 in the choir, and forms a group called Church End. It is a spacious building, with an embattled tower at the west end; it has some portions in the Decorated English, and some in the Perpendicular style: the east window, which is very fine, is of Decorated style. There are some meeting-houses for Independents, Baptists, and Quakers.

The area of the parish is 7910 acres; there were in 1831, 459 inhabited houses, and 2462 inhabitants: nearly one-half of the population is agricultural. The manufacture of linens and blankets, formerly carried on, has been given up; some sacking and coarse cloth are made. The market, which according to one of our latest authorities has been discontinued, was on Saturday.

The living is a vicarage of the yearly value of 421l., with a glebe house, in the archdeaconry of Middlesex. There is an almshouse for six poor persons.

About two miles east of Great Dunmow is the village of Little Dunmow (population in 1831, 378), where was a priory of Augustine canons, founded in 1104 by the Lady Joan de Lacy, who lay to the ancient church. Its yearly value at the dissolution was 172l. 2s. 4d. gross, or 150l. 3s. 4d. clear. The monastic buildings are now razed, and the site partly occupied by the manor house. The priory church was a large and stately fabric, partly in the decorated English, and partly in the perpendicular style; it was finished by Simon de Montfort, and the revenue was sustained by pillars, having capitals ornamented with oak leaves elegantly carved. Some of these remain in the part now used as the parish church. The well-known custom of the "fitch of bacon" was connected with the monastery of Little Dunmow. [W. D. Magoun.]

Easton Lodge, the seat of Viscount Maynard, is situated on high ground in a spacious park about two miles north-west from Great Dunmow. It is a venerable pile of the Elizabethan period and style. In the returns of schools making examination, for the year 1832, at Great Dunmow, except that there was a national school for girls, containing 103 scholars; and that a national school for boys, suspended from various causes at Christmas, 1832, had, at the time of the suspension an average attendance of 72.

Epping is in the half-hundred of Waltham, and on the high road from London to Norwich by Newmarket, 17 miles from London. The principal part of the town, called Epping Forest, is almost cylindrical in form, 845 acres in extent, half a mile in length, lined with irregularly built houses, and having in the centre a row of decayed mean-looking shambles. The church is situated two miles north-west of the street, and with the houses grouped round it constitutes what is distinguished as Epping Upland. The church is pleasantly situated on a rising ground; it is dedicated to All Saints, and is not distinguished by its architecture. In the "Street" is a chapel of ease originally belonging to the abbot and monks of Waltham, to whom the great tithes had been granted, and who kept the parish in their own hands as a curacy. The chapel is now vested in trustees for the benefit of the inhabitants. It stands at the London entrance to the town, and has lately been rebuilt. There are places for corn, butter, eggs, and poultry, and occasionally live stock.

There are about 215 families, of which 83 houses and 427 inhabitants are in Epping Upland and the hamlet of Ryhill, the last in Harlow hundred.

In Epping Upland four-fifths of the population is agricultural, in the whole parish about two-fifths. The Epping Forest is celebrated for hunters, park, and sausages, of which articles it furnishes a considerable supply to the metropolis. The market is on Friday. In the spring great numbers of sucking calves are brought to Epping market from Suffolk, and those parts of Essex where dairy farms are numerous are numerous.

The living of Epping is a vicarage 'in the peculiar jurisdiction of the Court of the Commissary of London, concomitantly with the Consistorial Episcopal Court.' (Lewis's Top. Dictionary.) Its yearly value is 725l., with a glebe-house: the chancel is of the yearly value of 120l., arising from endowments.

The returns made to parliament in 1833 assign to the parish of Epping four infant or dame schools, with 20 children, eight boarding or day schools (one of them a charity school), with 943 scholars, and one Sunday-school with 83 scholars; and ten boarding schools for girls. About 70 girls from this parish attend the national school of Thoydon Gurnon or Thoydon Gurnon (two miles south-east of Epping Street), to which the parishioners of Epping contribute largely.

About the parish is Copped Hall, a mansion erected near the site of an older structure raised by the monks of Waltham Abbey when they had possession of the manor; it was built near a century ago, and has since been much improved. It is one of the finest seats in the county. Near it is the remains of an ancient camp, probably British, now overgrown with trees, called Ambreys, or Amberleys banks.

Epping gives title to Epping Forest, a considerable tract of waste land in the south-west part of the county. This forest was formerly a deer forest, and was long an only forest in that county, the whole of which was antiently comprehended in it. By a charter of king John, dated 25th of March, in the fifth year of his reign, and confirmed in the eighth of Edward IV, all that part of the forest which was within five miles of the town of Colchester (very distant from the present boundaries) was disforested. The forest was further reduced by a perambulation made in the twenty-ninth of Edward I., in pursuance of the Charia de Fora; but the moats and bounds of this forest were finally removed, at the instance of Robert de Colchester (very distant from the present boundaries) was disforested. The forest was further reduced by a perambulation made in the twenty-ninth of Edward I., in pursuance of the Charia de Fora; but the moats and bounds of this forest were finally removed, at the instance of Robert de Colchester (very distant from the present boundaries) was disforested. The forest was further reduced by a perambulation made in the twenty-ninth of Edward I., in pursuance of the Charia de Fora; but the moats and bounds of this forest were finally removed, at the instance of Robert de Colchester (very distant from the present boundaries) was disforested. The forest was further reduced by a perambulation made in the twenty-ninth of Edward I., in pursuance of the Charia de Fora; but the moats and bounds of this forest were finally removed, at the instance of Robert de

The Epping Forest is estimated to contain 60,000 acres, of which 45,000 acres are estimated to be enclosed and private property; the remaining 12,000 acres are the unenclosed wastes and commons. What extent of this forest is cultivated as part of this waste. (Fifteenth Report of the Commissioners of Land Revenue, quoted in Young's Agriculture of Essex.)

Tending hundred had been disinterred by king Stephen before the grant of John mentioned above. (Moret's Hist. of Essex.)

On Easter Monday there is a stag-hunt much patronized by the inhabitants of London. The kennel for the hounds and the building belonging to the hunt were rebuilt several years ago at an expense of many thousand pounds.

Grays Thurrock is in the hundred of Chafford; it is on the bank of the Thames, 24 miles from London, through
Ramford, Upminster, and Stifford. This little town consists chiefly of one irregular street on a creek of the Thames, accessible to boats and other small vessels. The church, near the north end of the town, is built in the form of a cross, with a tower on the north side.

The population is 1274; the number of inhabited houses by the census of 1831 was 243, the population (including that of the liberty of Lee, in East Tilbury parish, a barstable hundred), 1246. The population had greatly increased before the census, owing to the number of laborers employed in brick-making. The market is on Thursday, and is chiefly for the sale of corn; it is much frequented: there is one yearly fair.

The living is a vicarage of the yearly value of 160l., with a glebe house: it is in the archdeaconry of Essex.

The market town may be reached by day-scholars, and 20 of whom (boys) were educated from the proceeds of an endowment; and two Sunday-schools, with 202 children.

There are two villages near this town which also bear the name of Thurrock: Little Thurrock, to the east of the town (population 292), and West Thurrock, to the west of the town (population 504). The chancel-pancles of Purfleet are in the parish of West Thurrock. In Little Thurrock parish, and in Chadwell parish, which adjoins it, are some remarkable caverns or holes in the chalk, to which tradition has assigned the names of 'Cow Cave' and 'Chadwell Holes.' It has been conjectured that they were granaries of the antient Britons. They are also called 'Dane holes,' from having been used by the Northmen as lurking-places or receptacles for plunder.

The town stands in Hinchford hundred, on the north-east bank of the river Colne, and on the road from London by Bury to Norwich, 463 miles from London, and 174 from Chelmsford. It is supposed that a market was established here in the Saxons times: a hill at the upper end of the town, now in several centuries it was held, retains the name of Chepping hill.

The town stands on the slope of a gravelly eminence, rising from the river, and consists of the main street along the Norwich road, and some other streets. The church is noteworthy for its ancient towers. In the space of one churchyard, extent of accommodation 1200 persons, and consisting of a nave, chancel, and side-aisles, chiefly in the Perpendicular English style: the chancel is in the Decorated style, with a good window of five lights, and others of two lights. There is a tower at the west end surmounted by a wooden spire, the third that has been erected on the same tower, two previous ones having been destroyed by lightning. There are places of worship for Independents, Baptists, and Quakers. There is a house of correction at Halsted.

Halsted is one of the largest places in the hundred, and had, in 1611, 959 inhabited houses, and 4637 inhabitants: about three-eighths of the population is agricultural. The silk manufacture is carried on to a considerable extent: the manufacture of baste and other light woolens has been discontinued; but a market is held, one of the principal in the county for corn and occasionally for cattle and other live stock. Some hops are grown round the town.

The living is a vicarage, of the yearly value of 390l., with a glebe-house, in the gift of the bishop of London: the minor canons of St. Paul's are the impropriators. There was a college of priests at Halsted before the Reformation; the foundation was for eight, but it is doubtful there was ever the full number. The revenue at the dissolution was 262. 5s. 4d. Besides 20l. or 27l. 10s. net.

There were in Halsted, according to the returns made to parliament for 1833, ten infant or dame schools, with 120 scholars; four day-schools, one supported by voluntary contributions, containing 40 children, and three others with 100 children; and four Sunday-schools, with 676 scholars. There is a grammar-school, founded by Dame Mary Ramsey, for 40 poor children of Halsted and Colne Engaines (a neighbouring parish), which is not distinctly mentioned in the return.

A house in this parish is a Greek inscription, brought from a village near Smyrna, where it was erected one hundred and fifty years before Christ, to the honour of Cato, a musician. (Beauties of England and Wales, 1803.)

Near Halsted are the remains of the ancient manor-house of Stansted Hall.

Manningtree is in the hundred of Tendring, on the estuary of the Stour, 60 miles from London, through Chelmsford and Colchester. This place was antiently known by the name of Seildinchon; the origin of its present appellation, formerly written Many-Tree, is not known. It is a small place, irregularly laid out. The church or chapel, built out of the ruins of a more antient one, which stood on the site not far removed from that of the present building, was formerly very small, but has been lately enlarged. There are meeting-houses for Independents, Quakers, and Methodists.

The parish, or rather the chapelry, by the return of 1831, comprised 5000 acres, and had 241 inhabited houses, and a population of 1237, a very small proportion of which was agricultural. Manningtree appears to be the residence of an unusual proportion of genteel families. A considerable trade in malt is carried on; and corn, coal, deal, iron, and pitch, are all exported through the port.

The living is a perpetual curacy, united with the rectory of Mistley (of which the chapelry of Manningtree is a dependency) and the vicarage of Bradfield. The whole are of the yearly value of 500l., with a glebe-house. They are in the archdeaconry of Colchester.

The chapelry contained, in 1833, one national school, containing 223 children; and one Sunday-school, with 60 children.

Mistley is adjacent to Harwich. Mistley Hall, the seat of the Richy family, is on a pleasant eminence in the midst of gardens and plantations elegantly laid out. On the bank of the Stour is a quay with warehouses, at which considerable trade in corn, malt, and coal is carried on. These belong to the proprietor of the manor.

A house built as a chapel of ease at Ongar from another parish of the same name (High Ongar, is in Ongar hundred, near the right or west bank of the Roding, and the left or east bank of the Craybrook, just above the junction of these two streams: it is 21 miles from London by Waltham Abbey, and 24 miles by Epping.

A castle was built here by Richard de Lucy, one of the principal nobles of the time of Henry II: the keep stood on the summit of a lofty artificial mound. The castle having been pulled down, a brick house was built by the then owner of the place on the site of the keep. This house was demolished in 1744, and a large summer-house, of castellated architecture, built in its room. The moat which surrounded the keep, and other earthworks, remain. The sides of the mound are planted with trees and shrubs.

The town chiefly consists of one long and wide street, extending from the bridge over the Craybrook up, the slope of which is so gentle and uniform that a street on a hill, in a central situation, is a small neat structure: the windows are remarkably small, so as to resemble the loop-holes of a castle. The church contains a monument of Jane, one of the daughters of Oliver Cromwell. Many Roman bricks have been found in the foundations of the church, and some of Roman buildings are said to have been dug up in the churchyard. The principal road from London to Colneudunum (Colchester) is supposed by some to have passed this way, though others make it pass near or through Romford and Chelmsford. The town is within the area of an ancient entrenchment, which may still be traced on its different sides. It was antiently called Ongar ad Castraum, perhaps with reference to this entrenchment. There is an Independent meeting-house.

The town, which is in the hundred of Romford, is a parish of 560 acres: the number of inhabited houses in 1831 was 134, and the population 298, of which a small proportion is agricultural. The market is on Saturday.

The living is a rectory in the archdeaconry of Essex, of the yearly value of 1275l., with a glebe-house today.

There were in 1833 nine boarding or day-schools, with 140 scholars; and two Sunday-schools, containing 95 children. One of the day-schools is endowed.

High Ongar, which is on the other side of the Roding, is a much more grassy place than Chipping Ongar, and had, in 1831, a population of 1262, consisting of 1500 souls. Rochford is in Rochford hundred, on the Broomhill river, which is navigable to within about a mile of the town, 40 miles from London through Romford, Brentwood, and Billericay. The town consists principally of two streets running one into the other in the form of a letter T: the houses are ill built: the market-house, which is of timber, stands

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near the centre of the town, and has on it the date 1767:
it is not used as a market-house now. There are two
bridges over the river, which close to the town is an incom-
siderable brook. The church, which is a little removed
from the town, is a good-sized building, consisting of nave,
chancel, and side aisles, with a lofty brick tower at the west
end. The tower, which is of later date, is part of the same
building as the church. At the lower end of the town are a row of brick almshouses for six
poor people, founded and endowed by Robert Rich, earl of
Warwick, in the early part of the seventeenth century.
The parish comprehends an area of 1240 acres: it had, in
1831, 271 inhabited houses, and a population of 1596, of
which more than a third was agricultural. The chief trade
is in corn. The market is on Thursday.
The living is a rectory, in the archdeaconry of Essex, of
the yearly value of 570l., with a glebe-house.
Romford is the site of a Newmarketian school, with
70 boys; a national school, with 64 children (rather
more on Sunday); seven other day-schools, with 158
scholars; and one Sunday-school, with 100 children: to
the Sunday-school a lending library is attached.

Romford is in the liberty of Havering, on the Bourne brook: it is a great thoroughfare, being on
the high road from London to Chelmsford, Colchester, Ips-
wich, Bury, Norwich, Yarmouth, and other large towns in
Essex, Suffolk, and Norfolk; between 11 and 12 miles
from London. It is a Monteford, as it was, and always has
been disputed, some contending that it is derived from Roman
ford, others from two Saxon words signifying 'broad ford.'
This place, or some spot in the neighbourhood, is supposed
to be the site of the Durolium of the Itinerary of Antio-

The town consists almost entirely of one long wide street,
near the centre of which is the market-house and town-hall,
which was repaired in 1768 at the expense of the town.
The houses are tolerably good, and the street is paved and lighted.
The western end of the street, from London, on the left hand, is a tolerably large building,
erected in the early part of the fifteenth century: it is dedi-
cated to the Virgin Mary and St. Edward the Confessor,
and consists of a chancel, nave, and north aisle, with a
south aisle, which was added during the later part of
the reign of Edward VI. At the east end of the nave is the
figure of Edward the Confessor in stained glass, the arms
of that king, and another coat of arms. The Independents
have a meeting-house at Collier's Row, a hamlet of the
parochial chapelry of Romford, about two miles north-west
of the town; a house for the pastor and a small endowment
are connected with it. There is also a Methodist meeting.
An almshouse for five poor men was founded and well
endowed by Roger Reed near the end of the fifteenth century.
There were formerly cavalry barracks at the London en-
trance to the town: they were of wood, and have since been
destroyed.
The parish comprehends an area of 3340 acres, and had,
in 1831, 766 inhabited houses, and a population of 4294,
of which less than one-third is agricultural. The general
market day is on Wednesday; there is a market on Monday for
calves, and on Tuesday for hogs. In spring and summer
great numbers of sucking calves are brought to market from
Suffolk and the dairy districts of Essex.

This parish, with those of Hornchurch and Haviing-
gate, forms a block of land which had been inherited by earls or
viscounts, or for which are held at Romford. Commissions for trying
cases within this liberty may be obtained by a small pay-
cement to the crown, but no commission has been applied for
many years. (Lyon's "Easvemna of London")

The town is in the liberty of Havering, and it is to be noted that the mayor of
the parish of Hornchurch, the limits of which were once coextensive
with those of Havering liberty, but separated from it by act of
parliament, A.D. 1638. The living is of the annual value of
800l., with a glebe-house, in the patronage of New
College, Oxford, and the advowson is held by the bishop of
Ely. There were, before the Reformation, a chantry and a small
guild attached to Romford chapel, the lands of which were
valued at 4l. 10s. 2d. per annum.

There were, in 1831, in the parish, one endowed day-
school, with 17 scholars, and two Sunday-schools with 143 scholars.

Walden or Saffron Walden is in the hundred of Uttles-
ford, which occupies the north-western extremity of the county:
it is near the Cam, and a little to the right of the
road from London to Newmarket and Norwich, 42 miles
from London. It was conjectured by Doctor Stukely, but
without sufficient authority, that this was a Roman station.
Its name is derived from two Saxon words, Weald, 'wood,'
and saefra, 'a valley': its epithet 'Saffron' is derived from the
great quantity of that plant formerly cultivated in the
neighbourhood: this cultivation has been long abandoned.

At the period of the Domesday survey the lordship of
Walden was held by Roger de Waltheof, Earl of Devon-
ville, one of the companions of the Conqueror. This noble-
man erected at Walden a castle, which, judging from the
remains of it, must have been of great strength.
The remains occupy the highest part of the town, and consist of
some parts of the walls is finished, built with flint bound
together by a very hard cement. Geoffrey, the grandson
of the founder of the castle, having deserted the party of
Stephen for that of the Empress Maud, obtained, of her
permission to remove the market from the neighbouring
village of Walden to the castle. Being there himself, having
been however seized by Stephen, he could only obtain his free-
dom by the delivery of his castles, Walden being one of
them, to the king. The same nobleman founded here in
1156 a Benedictine priory, which was some years later
raised to the rank of an abbey. It is said to have obtained several
valuable benefactions, and had, at the time of the disso-
lution, a yearly revenue of 406l. 15s. 1d. gross, or 372l. 18s.
1d. clear. This site was granted to Sir Thomas Audley, lord
chancellor, and the title of Lord Audley of Walden was
exchanged for the possession of the monastery, enlarged by a
subsequent addition of 200 acres, stand the present mansion and park of Audley End.

The town is irregularly laid out, and the houses are many
of them of considerable antiquity. The church is a large
and very elegant Kangham style. It has a nave and aisles,
large south porch, and chancel and aisles. The clerestory windows of the nave are very
large and of six lights; those of the chancel, which has a
lower roof, are much smaller, and two in each arch. The
tower is of brick, with crocketed ogee heads. The windows of the aisles are very
large, filling up the spaces close to the buttresses, and
they are mostly square-headed. The tower has held but-
tresses, crowned with octagonal turrets, and very long plain
buttresses. There is a spire, which is covered with lead, appear to be of later date than the
church. The interior of this church is very fine, the piers
being remarkably light and elegant.' Rickman's "Essay on
Gothic Architecture." Since the above extracted account
was written the wooden spire has been replaced by one of
stone more in character with the rest of the building.

There are two places of worship for Calvinistic or Parti-
bans, and one for Arminian or General Baptists, and one
for Independents, Quakers, and Wesleyan Methodists.
A town-hall for the use of all the inhabitants of the
town is spacious. There are a cattle-market and a handsome
range of almshouses lately built in the place of a former
range founded and endowed by Edward VI. for 16 decayed
housekeepers of each sex. There is also a new building
 lately erected near the ruins of the castle for a museum,
and for the meetings of a literary society established in the
town. Audley House, or as it is usually termed, Audley End,
the seat of Lord Braybrooke, is a noble mansion
erected by the Earl of Suffolk, who in the time of James
II. endowed it with the manor of Audley, and Borough
Audley. The grounds are beautiful, and the Cam, which flows through them,
though here an inconvenient stream, expands so as to
form a considerable sheet of water in front of the house.
The mansion, originally more extensive than at present, is
still within one of the earliest enclosures of the house, and
to its construction belongs the wall, which marks the
extent of the enclosure, and which, in many places,
was of brick. There were, near the house, a great
number of fish ponds, which were cut for the use of the
parishioners. In the time of Henry VIII., the
parishioners were suffered to use them only for the
purpose of fishing. In the reign of Edward VI.
the pond was cut down, and the water obtained
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many gentryed families in the town. The chief trade is in
barley and malt: the market is on Saturday. Walden is a
municipal though not a parliamentary borough. By the
Ministerial Reform Act the corporation consists of a mayor,
four aldermen, and twelve councillors. The borough is
extensive with the parish.

The living is a vicarage in the archdeaconry of Colchester,
of the annual value of £237½, with a glebe-house. Lord
Brabrooke is patron and impropriator.

There were in Walden in 1833 one infant school with
20 children: two national schools, containing 124 boys and
106 girls (with the addition of 10 boys on Sundays); a
school for 25 boys and as many girls, chiefly supported by
Lord Brabrooke; and six other day-schools with 212 chil-
dren. Two national schools with 499 children were
established in 1847, and in 1852 there were 837 children
in schools. The number of national schools was increased
from 6 to 10 in 1857, with a total of 549 children. The
number of children attending schools in 1860 was 1,176.

Waltham Abbey, or Holy Cross, is in the half-hundred
of Waltham, 12½ miles from London, a little to the right of
the road to Ware, Royston, and Huntingdon. It is on
the river Lea (which is here separated into several channels,
and has an extensive and pleasant view of the
Coblin brook, which flows a short distance from the
town on the east and south.

The first notice of Waltham occurs in the reign of
Canute, whose standard-bearer, Tovi, founded here a reli-
gious house with two priests, probably secular canons of St.
Augustine. The place derived sanctity and name (Holy
Cross) from a cross with the figure of Christ upon it found
at Montacute and transferred here, to which miraculous
powers were ascribed. Harold, afterwards king of England,
occupied a part of the abbey in 1064; but the church was
ruined by the example of the four tall piers of the east end,
one of whom had the rank of dean, rebuilt the church, and
established such a school of learning as the state of the
age admires. When the unfortunate Harold fell in the
battle of Hastings, 1066, he had given up to his mother,
who was brought to Waltham for inter-
mant and his tomb erected. William the Conqueror treated
the religious of Waltham harshly, and deprived them of
their revenues; but left them the lands unvisited for
near 400 years. In the reign of Henry II. (a.d. 1177) regular
canons were substituted for seculars, the number enlarged
to 16, the endowments of the establishment augmented,
and the dignity of abbot conferred upon the head of it.
Some regalia of prelates were deposited in the church,
and the abbey flourished under the patronage of Henry III.
frequently resided in the abbey, and granted to the in-
habitants of the village the privilege of a market and a
fair. Some accounts make the market more ancient. In
the reign of this king, a.d. 1242, the conventual church was
again built; and the king, in his edict, commanded that the
building being present. The yearly revenues of the abbey at
the dissolution were 1076½. 12½. 1d. gross, or 900½.
4. 5d. clear.

The town consists principally of one main street, running
east and west. The church, formerly part of the
conventual church of the Augustinians, was
situated near the centre of the town. As the conventual church it
was very extensive, consisting of nave, transept, choir, and
chapel. At the intersection of the transept, which may
still be traced, rose the great tower, which contained a ring
of six bells, most of this; falling in the road
mansion was blown up by underminders, and the whole choir,
tower, transept, and east chapel demolished. The nave
and some adjacent chapel alone remained: the nave, with
its side-aisles, forms the body of the present church. The
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church is surrounded by a large wall, and that
fragment of the second tier correspond in width to those of
the lower, but are not of equal height; the arches of the third
tier are three to each arch of the lower tiers, with a
window pierced in the middle arch of the third. The roof is
modern, and little ornamented. The side-aisles are surrounded
with galleries, erected about half a century ago. At
the west end of the church is a heavy square embattled stone
tower, 86 feet high, bearing the date 1538. From the south
side of the church projects the Lady Chapel, now used as a
vestry and school-room, under which is a fine crypt.

After the Dissolution, the south-east end of the church,
is now a repository for rubbish. These chapels have some
beautiful and well-executed portions in the Decorated Eng-
lish style. There are traces of the various instruments
in windows of different dates. The font is apparently very
antient, and there is a fine wooden screen. The building
has been much injured and its beauty defaced by dilapid-
ation and alterations, but it is still well worthy of attention.

Exclusive of the nave of the abbey church, the nave
of the abbey are but few. They consist of an entrance-
gateway, and bridge across an arm of the Lea, which bounds
the enclosure of the abbey on the west side; some walls,
and a few vaulted arches in a garden belonging to the abbey
church. The refectory is in the church; and what is now the
abbey farm is said to have been antiently the stables.

The gateway is in a much later style of architecture than the church. In the gardens
formerly belonging to the abbey, now occupied as a nursery
ground, is a thin iron figure reported to be the largest in Eng-
land. There are at Waltham Abbey meeting houses for
Baptists and Wesleyan Methodists.

The parish of Waltham Abbey is extensive, comprehending
11,570 acres: it had, in 1831, 769 inhabited houses, and
a population of 4,164. Among the inhabitants were
three of the hamlets of Holyfield, Seward-
stone, and Upshire; leaving for that part of the parish
which contains the town 416 houses and 2,292 inhabitants:
only a small proportion of the population of the town divi-
sion is out of the parish. The population of Waltham
Abbey is largely augmented by the pastorates of
the hamlets is so. The powder-mills belonging to
co 

The town is generally reputed to have been built by
Edward the Elder, but it is questionable if that prior
must more than restore a place that bears names of having been
a great and flourishing city; whether in Roman times or
the remains of a circular camp, with a double vallum. A
quantity of Roman bricks are worked up in the tower
and body of the church, and one or two Roman coins are
discovered in levelling the fortifications of the above-mentioned
camp. It has been supposed that

Waltham was the Canusium of Antoninus, which is placed
by others near Kelvedon.

The town consists of two portions: the larger portion
consists of one main street running the road and a short
street on the south, which contains a population of 4,164;
but of these 344 houses and 1,926

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by others near Kelvedon.
There were, in 1833, fifteen day schools with 351 children, two boarding schools with 40 boys; and one Sunday school with 206 children, and a lending library attached. Of the day-schools, one (for 100 boys and 50 girls) is partly supported by an endowment; another (for 70 girls) partly by voluntary contributions.

Essex. The following are three particulars. From Witham, an ancient manor-house, different parts of which have been erected at very different periods. A tower gateway of curious architecture is supposed to be as old as the time of Stephen.

Beside the above market-towns, there are several villages which are of sufficient interest, with a call to notice. The following were formerly market-towns, and some of them still retain their place as market-towns in many of our common maps:—Great Bardfield, Brentwood, Dedham, Harlow, Hatfield, Hornend, Ingatestone, Leigh, Thaxted, and Woodford.

Great Bardfield is in the half hundred of Frensham or Frensham, on the south bank of the Pant or Blackwater, over which it has a strong brick bridge. In the south aisle of the church are several coats of mail, &c., said to have belonged to the Lumley family. The population, in 1831, was 1029, about half of them agricultural. The market has been long given up.

Brentwood is on the road to Chelmsford and Colchester, 16 miles from London and 11 from Chelmsford. Some Roman remains have been obtained from a mound near this town. The assizes for the county were formerly held here. The place consists chiefly of one main street along the high road, with irregular and mean houses: from its situation on a great thoroughfare, it has many public-houses and inns. The University of Essex and the manor-house of the abbey of St. Albans is here, and the tenants of which are bound to put them in repair if ever the assizes should be held in the place again. There is an ancient chapel in the town (for Brentwood is only a chapelry in the parish of South Weald, and the living a perpetual curacy). It was the residence of the abbots of the abbey of St. Albans, and is one of the fair places of the hundreds of ‘the hundreds’ obtain their live stock.

Dedham is in Lexden hundred, on the south bank of the river Stour, just on the right hand of the road to Ipswich and Chelmsford, 11 miles from the former and 7 from the latter. As the residence of Richard II. this place was famous as one of the seats of the clothing trade. It is situated in a picturesque valley, and has a small place, consisting chiefly of one street. The church is a large building in the perpendicular style of English architecture; it has a fine tower at the west end, with octagonal turrets crowned with rich pinnacles. There is a bridge over the Stour. The population of the parish, in 1831, was 1770, about half agricultural: many genteel families reside in the place. There is an endowed free grammar school, and a grammar school for woolen manufacture and of a considerable trade. The church is in a central situation, and is of tolerable size: it was originally in the form of a cross, with a central tower rising from the intersection of the transepts: this church was much injured by fire, and its existing nave was substituted for the tower: the church is adorned with much painted glass. There is a place of worship for Baptists, several almshouses, and a charity school.

At Harlow Bury, a mile north of the village, is a large ancient manor-house, used as a barn or farm-office. It has a fine semicircular-headed door, the shafts of which have small panels like that of the Galilee at Durham. There are some small windows with round heads and others with pointed heads.

The parish of Harlow contains 4200 acres, and had in 1831 a population of 2101, above half agricultural. There is a fair each year, for horses and cattle; the second, held on Harlow Common; for an excursion of two miles round, and even from the metropolis. The living is a rectory, with the impropriety of £350,- with a glebe-house, in the archdeaconry of London.

A large sum of money (6000l.), bequeathed by Mr. Geo. Foxcroft, has been put in trust for an establishment of a day school and library at Harlow, and for encouraging or otherwise advancing in the world those educated at the school.

Hatfield is in the half hundred of Harlow, on the road from London by Harlow to Epping, 30 miles from town: it is on the Pincey brook, which flows into the river Lea. This place was formerly part of the royal demesne, from which circumstance it obtained one of its distinguishing epithets. Hatfield Regis: its other designation of Hatfield Broad was derived from a great heath, which has flourished here in the Saxon times. A portion of this tree (if one may trust the accuracy of Mr. Arthur Young’s statement) was yet remaining in Hatfield Forest, a mile or two north of the town, when that gentleman published his agricultural work. The venerable tree is here. Aubrey de Vere founded, A.D. 1312, a collegiate priory at Hatfield, supposed to have been at first a cell of the abbey of St. Alban in Hertfordshire, and was afterwards presented to him, to which he gave the manor of Hatfield. The priory was in the archdeaconry of Middlesex.

Hornendon, distinguished from two other parishes of the same name by the epithet ‘in the valley’, is in the hundred, and is situated, as its name imports, on an eminence, from whence there is a fine view. The church is in the middle of the town; it has a stone tower, embattled. The parish had in 1831 a population of 511, chiefly agricultural. The immediate vicinity of Essex (1768), was very small; it has been since given up. There is one fair in the year, chiefly for wool. It is 273 miles from London through Brentwood.

Ingatestone is in the hundred of Chelmsford, and on the road from London to Chelmsford, 23 miles from London. It is supposed to have derived its name from a Roman millitary stone, and from the Saxon word Ing; a meadow; thus, Ingatstone. The village, which extends into the adjoining parish of Fryerning, consists of a long street along the high road, and a small street running out of this to the south-east. From its situation on so great a thoroughfare it abounds with inns. It had formerly a large cattle market, but this is now discontinued: there is a large cattle fair. The church is in the middle of the town, and contains several monuments of the Petre family. There is an almshouse and an Independent meeting-house. Ingatestone Hall, a little way south of the town, was once the seat of the Petre family; it is a very antient and irregular pile. The grounds are well stored with fish-ponds, and the whole place seems to have been improved. The present house, which is small, was in 1831 789, chiefly agricultural; to these we may add perhaps 300 for that part of the village which is in Fryerning parish. It may be observed that the syllable Ing (or Ging; which appears to be a variety of it), which enters into the name of the place, is found in the names of several other parishes or manors in this neighbourhood, as Fryerng, Margaretting, Mounteyng, Ginger-joburn (commonly called Buttsbury), Ingrave or Ging-rulp, and Tresting or Thrustling; to which we may add Bark-ing.
Raleigh or Rayleigh is in Rochford hundred, 34 miles from London. It was, at the time of the Domesday survey, one of the numerous lordships of Suene, who, having joined the Yorkist cause at its early period, allowed his possessions. He built a castle here, of which some earthworks yet remain, consisting of a mound with an oval base, surrounded by a double ditch and embankments. The village stands on an eminence, and has, at the upper end, the parish church, which is a fine perpendicular pile, with some portions of an earlier date: the tower has a short spire and, a staircase turret battlemented. The Baptists have a place of worship here. When Morant wrote, a weekly market was held at Rayleigh: it is now given up. There is a cattle fair. The population of this parish in 1831 was 1339, chiefly agricultural. The living is a rectory of the yearly value of £74l. with a glebe-house, in the archdeaconry of Essex.

Thaxted is in the hundred of Dunmow, 44 miles from London by Harlow, Hatfield Broke Oast, and Dunmow. This is a very ancient place, and probably existed in the time of the Saxons. It was incorporated by charter of Philip and Mary, and its government vested in a mayor, bailiffs, and chief burgesses; but the corporation became extinct in the time of James II., the corporate officers having retired from their offices on being served with a Quo Warranto. The town is irregularly laid out; its chief ornament is the church, which is in the centre of the town, and is one of the finest in the county. It is mostly in the Perpendicular style, and has under the chancel with side aisles, transept, and tower at the west end. The nave is not so wide as either of the side aisles, from which it is separated by eight clustered pillars on each side with pointed arches. The windows are mostly large, and the clerestory windows are ornamented with tracery and painted glass, but the latter is much broken and otherwise defaced. The north and south porches are richly ornamented with sculpture. The tower is sustained by buttresses, and is embattled, and terminated with a very rich crocketed spire, supported by flying buttresses. Most of the buttresses of the aisles have fine pinnacles, and are enriched with panelling. The height of the tower and spire is 183 feet, which is also the length of the church: the breadth of the church is 87 feet. It is supposed to have been built in the fourteenth century. There are at Thaxted meeting-houses for Quakers, Independents, and Baptists. There is a free grammar-school, which contained, in 1833, 30 boys on the foundation and 30 others whose education was paid for by their parents. Upon the same foundation 20 girls were educated at the school.

The population of Thaxted parish (which comprehends 5890 acres) was, in 1831, 2253, more than half agricultural. The living is a vicarage, in the archdeaconry of Middlesex, of the yearly value of £450l., with a glebe-house. The market is held on Friday, and a fair on the third Sunday in each month. There are two fairs in the year. There are several almshouses in the place, and the beneficences to the poor have been very considerable. Near Thaxted is the ancient hall, Horsham hall, the seat of Sir William Smith: it is a castellated gothic mansion partly covered with ivy.

Beside the above, which have been market towns, there are several other villages which, from their importance, call for notice.

Ashton, the parish of which, including the hamlet of Barlow End, had, in 1831, a population of 1103, is in the hundred of Freewald, three miles from Saffron Walden. It is supposed to have been the scene of a dreadful battle fought between Edmund Leyside and Caune; but the battle was more probably fought at Assington in the hundred of Rochford. At Barlow hills, in the parish of Barlow, Cambridgeshire, two miles north of Barlow church, the above-mentioned battles burrows have been regarded as those which the tumuli raised over them were slain in this battle, but this rests on tradition only.

Brightlingsea (population in 1831 1784) is on the estuary of the Colne, in Tendring hundred. The inhabitants are engaged in the oyster fishery. The parish forms a peninsula, surrounded by the marshes of the Colne and its inlets, except on the north-east side, where is the only entrance to the parish, except by a ford. The church is near this entrance, the village is a mile distant nearer the sea.

Morant speaks of an establishment for preparing coppers here, and the 'coppers house' is marked in the Ordnance Survey. Brightlingsea is a member of Sandwich in Kent, and the fishery allowed the population has nearly doubled within the present century.

Burnham is in Dengie hundred, on the north bank of the estuary of the Crouch, which has here a depth of water sufficient for a ninety-gun ship. It had a good street towards the east end of the town, and a quay nearly a mile from the village. The population, in 1831, was 1393: the inhabitants are engaged in the oyster fishery.

Chigwell lies between Epping and Hornhault forests; from Chigwell Row, on the border of the latter, a most extensive view is obtained over the south of Essex and the Thames into Kent. There is an endowed grammar-school which, in 1833, had six scholars, and another endowed school with sixty boys. Population in 1831, 1815.

The Hams are in Beconot hundred, and in the immediate neighbourhood of London. West Ham parish occupies the south-west corner of the county, and is bounded by the Thames and the Lea, by which it is respectively separated from the counties of Kent and Middlesex. It is divided into four wards: All Saints, Church Street, Plaistow, and Stratford. West Ham had formerly a market, the charter for which was procured in the thirteenth century. There was formerly at Stratford Langthorn, in this parish, an abbey for Cistercian monks. The abbey having become dilapidated, the monks left it in 1393, when part of the church was pulled down and used for building new abbeys. The revenues of this house were estimated at £737. 15s. 6d. gross, or 511l. 16s. 3d. clear. The chief remains now existing of the conventual buildings are a brick gateway, the entrance to the precincts, and an ornamental arch in the Early English style, which appears to have been the entrance to the chapel: they are nearly half a mile south-west of the church. The site of the precincts was moated and contained about sixteen acres. West Ham church consists of a nave and chancel, and side aisles to both: it is large, but not distinguished for its architecture.

Stratford, which is one of the wards of this parish, lies along the road to Romford, Chelmsford, &c., and may be regarded as a prolongation of the suburbs of the metropolis, being joined to it by an almost continuous line of buildings, consisting of the village of Stratford and part of East End in Middlesex. A new church has lately been erected here. The Newmarket road branches off from the Chelmsford and Colchester road at Stratford.

The population of West Ham parish was in 1831 11,580, of which 5,450 were males and 6,130 females. A considerable number of the inhabitants are labourers, employed in the East and West India docks at Poplar and Blackwall. Calico and silk dyeing and printing are extensively carried on; chemicals are manufactured, and porter is brewed. The West Ham waterworks supply the eastern suburbs of the metropolis with water. Several of the wealthier inhabitants of London have residences at West Ham.

The living of West Ham is a vicarage, in the archdeaconry of Essex, and in the gift of the crown: it yearly netted £751. There are several dissenting meeting-houses.

There were in this parish in 1833 two infant schools, partly supported by contributions, with 150 children; three endowed day-schools, with 257 children, some of whom were clothed; a national school, partly supported by endowment and subscription, with 50 boys; a school with 40 children, supported by contribution of Roman Catholics; another of 10 children, supported by Dissenters; and another school of 120 children, partly supported by contributions. The foundling hospital in the parish, for ten boys, had 390 children. There were also many private boarding and day schools, containing 488 children.

East Ham parish joins that of West Ham. The church consists of a nave, which we have mentioned, and a chancel, which forms the eastern extremity of the church, being circular at the east end, and has narrow pointed windows. Part of the walls of the nave and lower chancel are in the Norman style, as is the lower part of the tower; but the
windows of the nave are of later date, and some of them modern. In the church is a monument of Edmund Nevill, Lord Lisney. Similarly, there is a much later monument in the churchyard, but, at his own desire, without any monument. At Green Street, a hamlet of this parish, is an ancient manor, supposed to have been the residence of the Nevill family. The population of East Ham in 1831 was 1543, chiefly engaged in agriculture, and partly in manor-pieces, and a place of worship for Wesleyan Methodists.

The Hedinghams are in Hineford hundred, and on a road branching off from the Bury and Norwich road at High Garrett, two or three miles beyond Braintree, and running with it to the west, and before it runs into the county of Suffolk. They formerly constituted one parish; from the time of Henry III. they appear as two; Sible Hedingham, on the south-west bank of the Colne, 48 miles from town; and Castle Hedingham, on the north-east bank of the same river. We subjoin the following particulars respecting them.

Sible Hedingham, area 5490 acres. Population in 1831 2194. Living, a rectory in the diocesan of Essex and Herts, concurrently with the consistorial court of the bishop of London, of the yearly value of 653£, with a glebe-house. Castle Hedingham, area 2660 acres. Population in 1831 1220. Living, a donative in the archdeaconry of Middlesex, of the yearly value of 122£. The population of these places is more than half agriculturists.

Sible Hedingham church is a neat and tolerably spacious building, supposed to have been erected in the reign of Edward III. There was formerly a chantry here, founded by the executors of Sir John Hawkwood, whose monument is a stone effigy, who was vicar of Bradwell. The house of the chantry priest is still standing; it had been originally built for the reception and entertainment of devout pilgrims, and still retains the name of the hospice. The east window, which was part of the original structure, and stands, was built by the De Veres, to which family the lordship of Hedingham was given by the Conqueror. Its architecture, which is very similar to that of Rochester Castle, leads to the supposition that it was erected about the same time. There are other brick walls, apart from these, which date from the eleventh or the beginning of the twelfth century. The last wife of king Stephen, is said to have died here. In the civil wars of the reign of John, it was held by Robert de Vere, earl of Oxford, for the barons, and was taken A.D. 1216 by the king. In the beginning of the reign of Henry III. by Louis, dauphin of France, who was also earl of Pembroke, governor to the young king. In the reign of Henry VII. that prince was sumptuously entertained here by John de Vere, earl of Oxford, who had suffered worse than the grave. It had been one of the chief instruments in placing the crown on Henry's head. As the king was departing, he observed that the earl, to do him honour, had put livery's on his retainers, and in return for his hospitality compelled him to contribute to his train an outfit of a fine of 1000 marks for breaking a statute recently passed, forbidding such a practice. The De Veres retained the castle until A.D. 1625. It has since passed through various hands. The keep is the only part remaining; it is one of the finest and best preserved Norman keeps in the kingdom. The walls are about 100 feet high, and from 11 to 12½ feet thick at the bottom, and from 9 to 10 feet thick at the top: the eastern wall is at least a foot thicker than the others, having been so built, it is conjectured, in order to withstand the violent easterly winds. The building is a parallelogram of 25 feet on the east and west sides, and 62 feet on the north and south. At each angle on the top there was formerly an embattled turret; two of the turrets are remaining; the parapet, now destroyed, was also embattled. The castle is built of large stones, lying as it were, side by side, and found in the sand of the beach, and the mortar is of a mortar, and is cased on the outside with squared stone very neatly and regularly put together. It has five stories, including the ground-floor and platform: the principal entrance is on the first story, and on the west side, was goods of stairs leading up to it; the entrances to the ground-floor were made with labour in 1720 by the proprietor, who wished to convert that floor into an out-house. The whole building is worthy of attention; it has some fine Norman engravings in the interior. Castle Hedingham church is an ancient fabric of stone with brick battlements, partly in the Norman and partly in the Early English style; the tower is of much later date. In the chancel is a monument to John de Vere, earl of Oxford, who died A.D. 1539. A Benedictine nunnery was founded here by the first earl of Oxford and his wife, A.D. 1190. Its revenues at the dissolution were valued at 29£ 12s. 10d. The nunnery, long since converted into fields, and part of it belonging to it, are yet standing. There was also an hospital for the sick and decrepit poor at Hedingham, attached to which were two or three chaplains with a clerk and servant. This hospital has long been destroyed: it was on the south-east side of the estate.

Leigh is in the hundred of Rochford, about 36 miles from London. The houses are principally arranged in one street running along the foot of an eminence and on the bank of the Thames. The summit of the eminence and the banks of the river are occupied by the parishes of St. Emma and St. Mary. The church, with its ivy-tailed tower, and the manor-house. The population (1254 in 1831) consists chiefly of fisher-men. The place has some trade, and there is a small custom-house here. The Wesleyan Methodists have a meeting-house. Some Roman coins have been discovered at Leigh.

Leytan, or Low Leyton, derives its name from the river Lea, near to which it is situated; it is in Becontree hun dred, about 5 miles from London. It had in 1831 a population of 2320, of which less than one-third was agricultural. The village is inhabited by farmers and small merchants and tradesmen. The church is pleasantly situated, overlooking the marshy valley of the Lea, but possesses no beauty of architecture. Among the tombs in the chancel is that of the historian and antiquary John Strype, who, in his will, left 100£ for the support of the poor. There is a stone tablet bearing the inscription: 'John Strype, of Leytonstone, a hamlet of this parish. It was supposed by Camden that Leyton was a Roman station, the Durolitium of Antoninus; but though the name as interpreted by some according to whom Durolitum signifies the water of Ley,' gives no certain indication of the Roman position, the distances of the Itinerary. Roman and other antiquities have been however found at Leyton in considerable number: such as the foundations of buildings; Roman intermingled with Saxon offices; a subterranean arched gateway, and steps leading down to it; urns with bones and ash; and several coins with Saxon characters. At Rockhills, or Rockholt, manor in the south of this parish, are several treasurers, a square double embankment, with an intervening ditch, enclosing a circular embankment, thirty-three yards in diameter, surrounded by a moat; both are much obscured by arable.

St. Osyth is in the hundred of Tendring, 62 miles from London and 11 from Colchester, on the marshy coast at the north-eastern side of the mouth of the Colne. A small creek, or arm of that river is navigable for small boats up to the parish in this place. There has been a church here since 1531 was 1583, chiefly engaged in agriculture. The original name of the place was Chich, and it took its name of St. Osyth from a virgin said to be of royal blood, but whose history involves too glaring an anachronism to be worthy of credit, who founded here a nunnery, afterwards destroyed by the Danes. An abbey for the canons of St. Augustine was subsequently founded here in or before the year 1118, in honour of St. Peter, St. Paul, and the above-mentioned St. Osyth. The yearly value of the revenues of this abbey at the dissolution was 70£ 5s. 0d. by the crown, and 10s. by the dean. The quadrangle of the ancient monastic buildings is almost entire, excepting on part of the north side, where it has been replaced by modern apartments; the entrance is by a beautiful gateway of hewn stone mixed with flint, and has a straight, ogival arch, with two turrets, one on the east and west sides of the court bear marks of great antiquity, and among the ivy-covered ruins of the garden is a pier with a Latin inscription describing the ancient magnificence of the place. There are a battery, or martello tower, on the coast in this parish, and the church contains several monuments of the D'Arcy family.

Prittlewell is in Rochford hundred, 39 miles from London, on the northern shore of the estuary of the Thames. Milton, now a hamlet of this parish, is said to have been antiently a distinct parish; part of it has been
swallowed up by the sea gaining on the land. Morant, writing near the middle of the last century, says, 'it had a church, or chapel of ease, the remains of which were visible not long ago at low-water mark.' The village consists of two streets, on the slope of a hill, forming a right angle with each other, and within the church 1811 was the vertex of the summit of the hill. The church has a nave and chancel, side aisles running the whole length of the building, and of nearly equal breadth with the nave. There is a fine western tower (in the Perpendicular English style) embattled, with strong buttresses and rich pinnacles: from its height and lofty situation it is a good sea-mark. There was once a priory of Cluniac monks here, cell to an alien priory of the same order at Lewes, in Sussex, but afterwards made an independent monastery, whose revenues at the dissolution was 100l. 3s. 4d. 1551, 11s. 2d. 1552.

Southend is a hamlet of Prittlewell. It is pleasantly situated on the side of a wooded hill, and is in some repute as a bathing-place. The terraces, in what is commonly called New Town, or the upper town, is a handsome range of buildings. There are a good hotel, an assembly-room (beside one at the hotel), a theatre, and a library, the last some what in the Gothic style. There is an independent meeting-house. The population of the whole parish of Prittlewell was, in 1801, 205; in 1841, nearly half agricultural. Stansted Montefichet is 3/4 miles from London, on the Newmarket road, partly in Clavering hundred, and partly in Uttlesford hundred. It consists mainly of a long straggling street. The name, Stansted, is supposed to be of Scy or Saxon origin, one of a series of words, on or near which it stood; the epithet Montefichet was the surname of William Geron, to whose father the lordship had been given by the Conqueror, and who built a castle here; the artificial mound on which the keep was built is said to be the remains of a destroyed castle. The place took its name from the builder of the castle, or vice versa: population in 1831, 1560.

The Sokens, including Kirby le Soken, Thorpe le Soken, and Walton le Soken, are in Tendring hundred: these parishes, with ecclesiastical parishes consolidated, form a benefice in the diocese of London (except from the archdeacon's jurisdiction), of the annual value of 51/2, with a glebe-house. The word Soken is derived from the Saxo Soc, or Soc, signifying a peculiar power to administer justice within itself, and likewise the circuit within which such power was exercised. These villages possess some peculiar immunities, to which they owe their designation. They comprehend the promontory of the Naze, which formerly extended much farther to the west, but was cut off by the erosion of the coast. Ruins of buildings have been discovered under the water, particularly on a shoal called the West Rocks, nearly five miles from the shore, which is left dry at great ebb tides. The spot where the ruins are found is distinguished by the name of The Castle; but the place may be doubted where the place took its name from the builder of the castle, or vice versa: population in 1831, 1356.

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The quakers have places of worship in several of the large towns.

Essex is in the home circuit. The assizes and quarter-sessions are held at Chelmsford, where the shire-hall, an elegant structure, and the old county-gaol are now incorporated. From Chelmsford, a village about a mile from Chelmsford, on the road to Colchester.

For the election of members of parliament the county was, by the Reform and Boundary Acts, divided into two parts, each returning two members. The northern division comprehends the hundreds or half hundreds of Clavering, Dunmow, Freshwater, Hinckford, Lexden, Tendring, Thurstable, Uttlesford, Winstan, and Witham. Braintree is the chief place of election, and the polling-stations are Braintree, Colchester, Saffron Walden, and Thetford. Saffron Walden comprehends the hundreds or half hundreds of Barstable, Becontree, Chafford, Chelmsford, Dengie, Harlow, Ongar, Rochford, Waltham, and the liberty of Harvington. The chief place of election is Chelmsford, and the polling-places are Chelmsford, Billericay, Romford, Epping, Rochford, and Maldon. The boroughs of Colchester, Harwich, and Maldon continue to return two members each, as before the Reform Act. By the Boundary Act an addition (the parish of Heybridge) was added to Maldon. The boundaries of the other boroughs are as in the old parliament, or as the boroughs disfranchised or the new ones created by the Reform Act are in this county. The only change in the number of representatives made by that act was by the division of the county and the consequent addition of two representatives.

History and Antiquities.—In the earliest dawn of the authentic history of our island, Essex was inhabited by the Trinobantes (Triinobantes), a powerful tribe whose dominions perhaps extended across the Stort and the Lee to Romford and Harwich, and took its name from the time of Julius Cæsar's invasion (B.C. 55 and 54), Imanuentius, as he is called in Latin, prince of the Trinobantes, had been slain by Cassivelaunus, the predominating chieftain of a neighbouring tribe, and his son, Mandubrius, had been driven into exile, and his daughter by a Cæsar in Gaul. Cæsar's success induced the Trinobantes to imple of him the restoration of their native prince, and Cæsar, acting upon the usual policy of the Romans, which was to secure allies in or near the countries which were the objects of their attack, complied with their request. Mandubrius was restored, and afterwards secured in the possession of his throne by an express stipulation in the treaty between Cæsar and his British opponents. The alliance of Rome seems to have promoted the aggrandizement of the Trinobantes; Colchester, which they seem to have selected for the seat of their national nåïve, and some coins of his yet extant attest the commencement of civilization and the arts in this county. [Britannia.]

Castridacius (Kastridacius, Dion.), or, as he is commonly called (after Tacitus), Caracatus and Togodumnus (Togodumnus, Dion. Kastriðofennin), succeeded to their father's power, and had to bear up against the weight of Roman hostility when the invasion was renewed in the reign of Claudius (A.D. 43). After sustaining several severe defeats, the Britons retired into the marshes of Essex, and fighting with the vigour of despair, were enabled for a time to repel their assailants, though with the loss of Togodumnus, one of their leaders. But the arrival of Emperor Claudius was the signal for the renewal of the attack. The Trinobantes were subdued at the battle of Camulodunum (Kamulodunum, Dion. Kastriðofennin, Plut.), was taken, and subsequently made the seat of a Roman colony, which was however destroyed in the revolt of the Britons under Boadicea, and the Roman garrison slaughtered. The defeat of the ninth legion, which, by a bold and successful retreat, escaped with his cavalry to his camp and there stood a siege, added to the exultation of the Britons, who captured Londinium and Verulamium and massacred the inhabitants; but the bloody overthrow of Togodumnus in his attempt to collect his allies, and his failure, with an immense victory, in a great and decisive battle, decided, though it did not complete, the reduction of South Britain. Several of these events occurred in this county. In the Roman division of Britain, Essex was included in Flavia Caesariliana.

Mr. Lethbridge (Morant's Essex) places the final defeat of Boadicea somewhere between Epping and Waltham, near which a fine camp remains; but others place it in the fields immediately north of London. [Britannia.]

Several Roman stations were in Essex. Of these the most important is Camulodunum, upon the determination of the site of which depends that of the others. Three sites in this county have been proposed, Walden, Maldon, and Colchester. One antiquary (N. Salmon) places it at Castle Camps, in Cambridgeshire; other opinions, which place it in Yorkshire or in Scotland, may be dismissed at once. For Walden little seems to be urged but the pleasantness of the situation, an attribute which Tacitus ascribes to Camulodunum; for Maldon there appears to be little evidence, except the resemblance of the name and the opinion of Camden; while abundance of Roman antiquities, the pleasantness of its situation, the agreement of its distance from London with that given in the Itinerary of Antoninus, and the termination of its name—chester—a usual indication of a Roman station, agree in supporting the claim of Colchester. Perhaps the first part of its name also may be taken as evidence; for although the name of the waters are commonly of British origin, we may suppose that the Colne (whence Colchester) obtained its designation from the Roman colonia, which graced its banks. The two Iters of the Antonine Itinerary which connect Camulodunum and Londinium are as follows:

| Iter I X. | Camulodunum. |
| Iter V. | Londinium. |

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It will be observed that although the distances between Cesaromagus (the only intermediate station mentioned in both Iters) and Londinium and Camulodunum respectively do not agree, the total distance between the two extremes is the same in both, viz., Millia Passum liti, about equal to 48 English miles, which is nearly the distance of Colchester from London. From this it may be inferred that the Roman roads were commonly straight. The distances given in Iter IIX., which we take to be the most correct, will agree tolerably well with the positions assigned to the other stations in the map, and so they are marked by the Society for the Diffusion of Useful Knowledge, viz., Durolitum, near Romford; Cesaromagus, near Wiford; a village about a mile south-west of Chelmsford; and Caenonum, near Kelvedon. If these positions are fixed with tolerable approximation to accuracy, the Roman roads must nearly have coincided with the modern road from London to Colchester, which is probable.

It is supposed however to have crossed the Lea at Oldford, not Stratford; but this seems doubtful; possibly there were two branches of it, one passing at Stratford, the positions assigned to these stations in Morant's Essex agree with those in the Society's map, except that Durolitum is placed below Brentwood, and Cesaromagus at Chelmsford, or rather Writtle, which is a mile or two west of it, and not far from Wiford. Any station named the Antonine Itinerary, Ad Asam, was probably on the border of the county, perhaps at Stratford, just across the Stour, in Suffolk. It is given as distant from Camulodunum M.p. vi., which accord very well with Stratford.

A Roman camp with the line of which is given in many places, crossed the county from Bishop Stortford, in Iter II., by Dunmow, Raine Hall, Coggeshall, and other places, to Colchester. A record of the time of John describes this as 'calesia quam tendit de Serteford versus Colcestre.'

Roman antiquities have been dug up in many parts of the county, but especially at Colchester, where urns, pavements, and medals have been found in great abundance, and almost every ancient building shows a greater or less proportion of Roman materials worked up in its walls. Hard Colchester is the scene of Roman and Saxon remains and other military works. Tesselated pavements and other antiquities have been discovered on Mersey Island, which Morant supposes to have been the residence of a Roman factor, the 'Comes Litoris Saxonic.' The Roman shore has also been found at Wanstead; at Canewdon, not far from Rochford; at Coggeshall; at Toppessfield, not far from the Hedinghams; at Ridgwell, in the same part of the county, near a
Roman wall was formerly visible at Watling bridge, through which the Burelsheld passed, near the Stour, where is a Roman camp: and at Great Chesterford (near Saffron Walden), which was undoubtedly the site of a Roman station. Antiquaries have sought to identify this station with the Caunbric or Ean of Antoninus; but it is not yet certain that the Saxons, whom it is supposed the Saxons, had not the Roman wall in their possession centuries after the Romans left this part of the island. 

When the Saxons established themselves in Britain, Essex, with some parts of Hertfordshire and Middlesex, constituted a small kingdom, the possessors of which were, from their relative situation, called the East Saxons. From their origin, its first king was called the Saxon king. It was divided into a number of counties, including the London, which was the principal trading place, and appears to have become the capital of the East Saxons' kingdom. The successor of Athelstan was Sihtric, the successor of Sihtra Sceathryth or Scyld. The latter was the nephew of Ecgberht or Ethelbert, king of Kent, and was the son of Thorthryth, who embraced Christianity, and was in submission to his uncle, at that time the most powerful of the Anglo-Saxon kings. Sceathryth embraced Christianity, the bishop of the church of St. Paul in London, was founded by Ethelbert, and Mellitus, who had been sent from Rome to assist the missionary St. Augustine in evangelizing England, was appointed bishop of Essex, into which kingdom he had been sent as missionary by Augustine. Sceathryth himself founded the abbey and church of St. Remigius, afterwards called, from its situation with respect to the Thames, the Abbey of Saxon Shore. These events, though not immediately connected with the county of Essex, they are among the most important occurrences in the county annals of the East Saxons kingdom. 

The death of Sceathryth (A.D. 610), Saxred, Seward, and Sigebrht ascended the throne, and reigned conjointly; they restored Paganism and persecuted Christianity, and appear to have been killed together about A.D. 623. Sigebrht the Little reigned after them from A.D. 623 to 631, and after him reigned Sigebrht the Great, who, being converted by his friend Osy, king of Northumb-land, whom he met frequently to visit, and baptized by Fidman, bishop of Lindisfarne, restored Christianity in Essex, and sent for some Northumbrian monks to come and instruct his subjects. Gold, one of these, was consecrated bishop of the East Saxons (A.D. 631). Sigebrht was assassinated two years afterwards (A.D. 623). The sub-sequent kings of Essex were as follows: Swifthelm, Sibba, and Sihere; the latter died A.D. 673, and Sinhia turned monk A.D. 673; Sigebrht and Scealred; Odd, who went to Rome, and turned monk A.D. 707; Scealred, called Sealed by some, but erroneously: Swithhelm was reigning A.D. 758. There were a few others, whose very names are unknown. The dates are from Morant chiefly, but in so uncertain a time it cannot be relied on as very exact. 

In A.D. 633, Egbert of Wessex, who had just gained over bone of Mercia that victory which established the paramount supremacy of Wessex over the other kingdoms of the Octarchy, despatched his son Ethelwulf and the war-like statesman Ecgbert of Alast, bishop of Sherborne, and Kent and Essex, of the Saxons, the possession of whom sank into more dependencies of Mercia, were subdued, and probably united under the designation of the kingdom of Kent, occupied by Ethelwulf as subordinate to his father, and of which mention is occasionally made in the history of Ethelwulf and Ethelbert. The connexion of the Saxons kingdoms were finally incorporated; and England, with the exception of those parts which were occupied by the Danes or retained by the Britons, was consolidated under one seigneur. 

When Alfred, after the recovery of his throne, assigned to the pratical Northmen, or Danes, a settlement in and about East Anglia (A.D. 877), Essex was included in the ceded territory. One or two of the naval conflicts between the ships of Alfred and those of the pratical Danes who inhabited the coast of Essex are mentioned. The Saxons were driven off the Essex shore. Thirteen or sixteen sail of Danes were destroyed in the month of the Stour, near Harwich (A.D. 884); but the victorious fleet was destroyed near the Thames mouth by some ships fitted out by the remnant of East Anglia in violation of their engagement to the Danes. On the death of Godwin (A.D. 918), Essex returned under the government of Alfred, who appointed Bertha the earl of the county. When Hastings invaded England, A.D. 878, and the main part of his army had been defeated at the battle of Chippenham, the Danes followed him into the county of Essex: and England, the resistance of which was not so great and as easily overthrown as Wessex and Mercia, were then in possession of the Saxons. The Saxons pursed by Alfred, until they received the Colne and found refuge either in Mersey Island (Turner), or more probably in the peninsula of Lindsey (Breckley, Speed, M. Morant, who has supposed that the Essex king had not any may at the time to press the siege. Alfred in person, and afterwards when he was called away, his generals, maintained a close blockade on the land side, and laid the Danes under siege and agreed to retire from his dominion, and were treated with respect and kindness. Some of his children prisoners, recovered a quantity of plunder, and broke up and burned many of their ships, or carried them away to London and Rochester. The wife and children of Hastings were landed with presents by Alfred and sent back to the pirate chief, but his heart was broken thereby softened. He erected another fortress which large forces appeared still to remain at South Shobury, in Essex, a few miles from his former one. With his main army he crossed the island to the Severn; but was compelled to return without conquest (A.D. 879). When the Danes came on he assembled another army, and marched to Chester and into North Wales; but being everywhere watched by the vigilance of Alfred, he marched back through Northumberland and Mecca to Mersey Island, in Essex, the coast of which he had chosen as his winter quarters, and in which seems to have wished to establish a kingdom. Ultimately the Danish chief was compelled to abandon England after three years of incessant hostility (A.D. 920-922), and Essex returned peacefully under the West Saxons. 

After the death of Alfred (A.D. 901), and the choice of Edward the Elder as his successor, Athelwald, or Ethel-wald, son of Ethelbrht or Ethelbert, Alfred's elder brother, claimed the throne, and having taken a pratical life, and obtained foreign aid, returned and subdued Essex. The subsequent death of the invader in battle (A.D. 905) put an end to the strife, and restored Essex to the sway of Edward, who subsequently rebuilt or fortified Willian (A.D. 913), in order to bridle the rebellious temper of the Danish colonists, and some years after (A.D. 928) fortified Maldon. In A.D. 921 he took by storm Colchester, which the Danes, with whom he was now at war, had held, and strengthened the place by repairing the fortifications; he also defeated an attack of the Danes upon Maldon. 

In A.D. 927 the reign of Edward II. Essex was again the object of Danish attack. A large force landed and attacked Ipswich, in Suffolk, and marching thence to Maldon, defeated and slew the governor, or earl of the county, who had collected some forces to oppose them, they were bought off by the payment of a large sum. In
A.D. 994 the coast of this county was ravaged by them; they were again bought off. Essex was one of the counties ceded by Ethelred to Swein, king of Denmark, by treaty A.D. 1010 or 1011.

In A.D. 1216 the earl of Winchester, one of the confederated lords, with an army of foreigners whom he had brought into the country, besieged Colchester castle, but withdrew upon hearing that of London was coming from London. However, he or some of his party soon afterwards took it and plundered the town. The king however retook it after a few days' siege. During the minority of Henry III., Colchester was the royal residence; and in 1237 (A.D. 1218), who had been invited over by the discontented nobles. At the siege of Calais by Edward III. Colchester furnished five ships and 170 mariners.

In the reign of Richard II. occurred the arrest of Thomas of Woodstock, duke of Gloucester, the king's uncle, who was at the time residing at his castle of Pleshy in Essex, about 6 miles north-west of Chelmsford. There the king visited him, and at the close of his visit invited him to return to town. At Stratford the king had placed in ambush the exit marshal and his followers, who had withdrawn upon hearing of the castle. The castle was subsequently smothered at Calais, and his body being brought to England was buried in the church of Pleshy, which he had himself founded.

Of the troubled period to which the above incidents may be referred Essex contains several memorials in the encampments, castles, and other ruins which are found in it. Various camps may yet be traced referrible to the British, Roman or Saxon periods, as that which includes the remains of Danbury hill (Danbury-hyge), and that between Chelmsford and Maldon; those at Maldon (probably the work of Edward the Elder), at Witham, at Ambresbury banks, near Epping, at Ruckholt, near Barking, at South Weald, near Brentwood, at Canewdon, and at Blunt's wells near Purfleet, are good examples of Saxon architecture and defences. Of the castles of the Norman period there are also several remains. Those at Colchester, Hedingham, Walden, Ongar, and Raleigh, have been noticed in this article or under their respective heads. Pleshy was the site of a Roman camp or station, and some Roman antiquities have been found at it. The castle was probably built by William de Magnaville, to whose father, Geoffrey de Magnaville, the place had been granted by the usurper Stephen. The keep with the moat which surrounded it were within the line of the walls of the town. The town at this period was called Pleshy. The town of Pleshy was built, and the bridge which led to it over the surrounding moat, are all that remain of the once proud structure. Of Hadleigh Castle, near Raleigh, dilapidated portions of two towers yet remain, forming picturesque masses of ruin. At Clavering in the north-west part of the county are the mound on which the keep stood and the moat of a castle, long since destroyed.

Of the halls and manor-houses which succeeded the Norman castles and gave indication of a quieter period, there were few that remained. The great majority of these buildings had not quite subsided into peaceable security, may be mentioned Heron Hall, near East Horndon, Nether Hall, near the confluence of the Lea and the Stort, Tolleshunt Beckingley or Tolloshunt Magna, between Maldon and Colchester; and in the north-west part of the county, Belsize or Bells House, near Purfleet, Cott or Cowell Hall, near White Roding, Eastbury, near Barking, Danbury Place, between Chelmsford and Maldon, New Hall, near Chelmsford, and Topping Hall, between Chelmsford and Witham. Of Heron Hall two picturesque round towers remain; and of Nether Hall, a vast gateway with two half hexagonal turrets, one towards the west, as to prevent their destruction when the rest of the mansion was pulled down, about A.D. 1773. Of Tolleshunt minor-house there remains an ancient brick gateway, with four embattled turrets. Of Layer Marney Hall, the gateway and gateway of the south side are yet standing, and converted into a farm-house and offices: it was originally a large quadrangular building, inclosing a spacious court, to which the existing gateway was the principal entrance. Of Covet Hall there remains a gateway of brick, much ornamented. The other houses are, we believe, entirely except New Hall, of which however a large portion remains, formerly occupied by some English nuns from Liege, who took refuge in England from the French Republican armies. Other ancient houses have been already noticed in the course of this article, and we have only further to mention Gosfield Hall, near Halstede, which belongs to the duke of Buckingham, and is probably of the time of Henry VII. This mansion is of brick, and incloses a quadrangular court, into which all the lower tier of windows formerly opened. There were no outside windows on the ground-floor, and those of the upper story were strongly beheaded, and from this place considerable strength. The house as originally built consisted of only one room in thickness, and there was no communication round the inside but by passing through the windows; and additions and alterations have been made in modern times. There were several good pictures, the rest have been removed to Slow, another mansion of the duke. The park is extensive.

At the Reformation Essex possessed several religious houses, of which the most ancient are. There were at the time of the Suppression seven of the great monasteries, that is, of those which according to the valuation of their lands and endowments possessed a clear yearly revenue of above 200l. they were as follows:

<table>
<thead>
<tr>
<th>Place</th>
<th>Description</th>
<th>Yearly revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barkings</td>
<td>Abbey for Augustinian monks</td>
<td>750 5 8</td>
</tr>
<tr>
<td>Coggeshall</td>
<td>Abbey for Cistercian monks</td>
<td>298 8 0</td>
</tr>
<tr>
<td>Colchester</td>
<td>Benedictine Abbey</td>
<td>692 17 0</td>
</tr>
<tr>
<td>Stratford</td>
<td>Nunnery Abbey</td>
<td>573 15 6</td>
</tr>
<tr>
<td>Walden</td>
<td>Abbey for Benedictine monks</td>
<td>465 11 11</td>
</tr>
<tr>
<td>Walton</td>
<td>Abbey for Augustinian monks</td>
<td>1073 12 1</td>
</tr>
</tbody>
</table>

For any further particulars of these see above, or in the articles Barkings and Colchester.

Of the smaller religious houses, the following remains may be noticed in addition to such as have been already mentioned.

The remains of Bilegh or Beleigh Abbey, near Maldon, have been converted into a farm-house and offices; the church, the most perfect portion, having been used as a habitation. It is small, 36 feet long by 18 broad, formed of a finely-grained limestone, and have groined arches, supported by three slender Purbeck columns. These ruins are chiefly in the Perpendicular style, with some portions of earlier date.

Of Tilney priory, between Dunmow and Thaxted, the east end of the church remains, and now used as the parish church; there are several of the old monuments. The church is a remarkably fine specimen of decorated work, with bold buttresses at the eastern angles, and two rich niches for statues. The east window is very fine, ornamented with tracery, and in the interior of the church are some rich stalls.

Of Bycknaro Priory, between Chelmsford and Maldon, the central arches of the church and a small portion of the ancient wall remain. They are of very late Norman or Early English work. At Coton Priory, near Harlow, there are some remains used as a barn; the building contained some good decorated work. Lees Priory, between Chelmsford and Braintree, there is a gate-house, with an embattled octagonal tower at each corner, and Perpendicular work. At Aslacton Priory, between Brentwood and Ingatestone, there are some slight remains. The churches of Blakemore or Blakemore priory, between
Ingatstone and Ongar, and of Hatfield Peveril Priory, between Chelmsford and Witham, have been made parochial: the latter has been much altered; it retains a good Norman door, with zigzag mouldings.

But before those which we have already had occasion to mention, the following deserve notice — Greenstead church, near Ongar, is a very curious edifice, and one of the most ancient in the kingdom; it seems probable that it was built as a sort of shrine for lodging the body of St. Edmund, king of East Anglia, on its being taken back from London to Bury St. Edmund's, in the early part of the eleventh century; and that it was afterwards enlarged to serve as a parish church. The nave is entirely composed of wood, the sides being formed of the trunks of large chestnut-trees (or oaks) split, sawn, and hewed, and set upright close to one another. They are let into a wooden sill at bottom, and into a plate at top, and secured with wooden pins; two vacancies are filled up with plaster. There is a boarded tower at the west end, but this does not appear to be so ancient as the nave; also a wooden porch on the south side of the nave. The chancel is partly of brick, and the nave is strengthened by brick buttresses. The entire length of the original or wooden part of the church is 29 feet long by 14 broad, and 3.5 high to the spring of the roof, which is tiled, and not so ancient as the sides. Little Maplestead church (near Halstede) is a building of great interest, being the latest of the few round churches in the kingdom; it is of pure Decorated character, and its details plain, but very good. The chancel end of this church is also round, and is probably the original portion of the church as now in form. The diameter of the circular part is about 26 feet (or 30 feet according to others); it has a peristyle of six clustered columns, supporting pointed arches; the whole length of church and chancel is about 40 feet. South of Halstead is a very neat Gothic church, which has a fine tower, such as may be commonly seen in Norfolk, but not much elsewhere; it has an elaborately and variously enriched Norman door: Corringham and some other churches have Norman portions.

When the Catholic religion regained a temporary pre-eminence over the Reformation under Mary I., the persecution was very severe in Essex. Seventeen persons (five of them women) were burnt at Colchester; and one died in prison; and two persons (one a woman) were burnt at Stanfort.

The year 1571 was remarkable for the settlement of the Flemish refugees at Colchester; they introduced the woolen manufacture into that and several other towns in Essex.

When the Spaniards were expected to attack England with their Invincible Armada (A.D. 1588), a camp was formed at Tilbury, where a body of more than 18,000 men, under the earl of Leicester, was posted. Tilbury Fort was then a block-house, which had been built by Henry VIII. to command the river; and in this fort, during the long period (upon the alarm caused by the Dutch sailing up the Medway, A.D. 1587, and burning the ships at Chatham), enlarged and made a regular fortress, as it is at present. The camp of Tilbury was visited by Elizabeth, whose presence increased the general enthusiasm. Colchester on this occasion furnished three ships and a pinnace to the English fleet. In 1605 the same town furnished three ships for the expedition to Cadiz.

In the war with Spain at the beginning of the reign of Charles I., the fleet was caused arising alarm by appearing at Harwich; but they made no attempt to land (A.D. 1625).

In the civil war at the close of the same reign, Essex was almost entirely in the interest of the parliament, and joined in an association for mutual aid and succour with the other eastern counties of Norfolk, Suffolk, Cambridge, and Hertfordshire; this was called the Eastern Association. The towns of Essex and Suffolk, upon a requisition from the committee of both houses, raised 2000 men for the service of the parliament, besides large supplies both of men and money which they sent to the parliament's soldiers at different times. The county appears to have been exempt from the immediate sufferings of the civil war during the continuance of the main contest; but in the year 1648 it was the scene of one of those isolated and abortive attempts of the royalists, the narrow resistance of the towns to the great triumph of the war. A part of the royalist forces, which had been raised in Kent under Goring, earl of Norwich, and Sir William Walker, and were pressed by Fairfax and the parliamentary army, crossed the Thames into Middlesex, and retreating thence into Essex, were joined by the royalists of that county (who had previously seized the parliamentary committee at Chelmsford) and by some royalist gentlemen from Hertfordshire. Their leaders were the earl of Norwich, Lords Loughborough and Capel, Sir Charles Lucas, Sir George Lisle, Sir Bernard Gassion, Sir William Campion, Sir William Compton, Sir William Ley (now Sir William Leyton), and many other officers and gentlemen. They retired first to Chelmsford, from thence to Braintree, taking in their way Lees House, the seat of the earl of Warwick, and from thence to Colchester, which they entered by convention, after a slight skirmish with the town of Braintree, and were for several months in advance in pursuit of them, and made a desperate attempt to storm the town. The royalists repulsed him, but with the loss of one of their men of note, Sir William Campion, and nearly 200 men killed and wounded. The Parliamentary loss was probably nearly 1000 killed, wounded, and taken. Fairfax now laid close siege to the town, which was blocked up on every side; and two small frigates of ten and eleven guns, which lay in the river to assist the king's party, were taken by some parliamentary vessels from Harwich. After a siege of between two and three months and several severe actions, the royalists were forced to surrender at discretion. The parliamentary general, deeming it necessary to make an example of the leaders of this rising, and being sanctioned by the determination of a committee of war, commanded Sir William Campion, Sir George Lisle, Sir Bernard Gassion, and Colonel Farre to be executed; the day the town was given up. Farre had escaped; Gassion, who was a Florentine, was reprieved; but the other two were shot under the walls of Colchester Castle.

In A.D. 1665 and 1666 Colchester suffered severely from the plague. In the abovementioned years 17,311 persons died of it: nearly 200 of them in one week. In A.D. 1664 the charter of Colchester was surrendered to the crown, and a new charter was granted the same year, which was remodelled by James II. A.D. 1685; but after the Revolution the original charter was restored.

The history of the county presents no later events of any interest.

(Moro's History of Essex; Bently's History of England; and Wales; Ordinance Survey of Essex; Cundy and Phillips's Outlines of the Geology of England and Wales; Young's Agriculture of Essex; Rickman's Gothic Architecture; Turner's Anglo-Saxon Excursions in Essex; Parliamentary Papers, &c.)

STATISTICS.

Population. — Essex is an agricultural county, and but few of its inhabitants are engaged in manufactures. Of 79,283 males twenty years of age and upwards, living in the county in 1801, 43,683 were engaged in agricultural pursuits, and only 571 in manufactures or in any other manufacturing machinery. Of these latter 500 were employed in the manufacture of silk goods, principally at Braintree, Great and Little Coggeshall, and Bocking; at Chelmsford there were 20 sail-love-machinery makers; about 30 men were engaged in the manufacture of gunpowder at the government establishment at Waltham Abbey. At West Ham, in the vicinity of the metropolis, operative chemistry goes employment to several of the inhabitants. Essex ranks 6th in the list of agricultural counties, and in this respect retains the same position as in 1811.

The population of this county at each of the four periods in which the census was taken during the present century was —

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Inc. per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>111,336</td>
<td>115,081</td>
<td>226,417</td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td>124,029</td>
<td>127,674</td>
<td>251,703</td>
<td>11.49</td>
</tr>
<tr>
<td>1821</td>
<td>141,989</td>
<td>150,442</td>
<td>292,431</td>
<td>14.63</td>
</tr>
<tr>
<td>1831</td>
<td>159,015</td>
<td>154,927</td>
<td>313,942</td>
<td>9.50</td>
</tr>
</tbody>
</table>

Showing an increase between the first and last periods of 91,676, or a little more than 40 per cent, which is 17 per cent below the whole rate of increase throughout England.

The following table is a summary of the population, &c., of every hundred taken in 1831 —
County Expenses, Crime, &c.—The sums expended for the relief of the poor at the four dates of
£.  £  s.  d.
1801 were £131,470, being
1811 12 1 for each inhabitant.
1821 14 8 and
1831 17 7 of.

The sum expended for the same purpose in the year ending March, 1836, was 185,394 l. 17s.; and assuming that the population had increased at the same rate of percentage since 1831 as in the ten preceding years, the above sum gives an average of 11s. for each inhabitant.

These averages are above those for the whole of England and Wales.
The sum raised in Essex for poor-rate, county-rate, and other local purposes, in the year ending the 25th of March, 1833, was 311,964 l. 16s., and was levied upon the various descriptions of property as follows:—

£.  £  s.  d.
Land—
On land 251,571 18
In other places, &c. 52,157 2
Mills, factories, &c. 6,859 2
Manorial profits, navigation, &c. 1,273 16

The amount expended was:—

£.  £  s.  d.
For the relief of the poor 265,629 6
In suits of law, removal of paupers, &c. 8,190 5
For other purposes 39,028 3

Total 313,747 14

In the returns made up for subsequent years, the descriptions of property assessed are not specified. In the years 1834, 1835, and 1836 there were raised £211,010 2s., £246,424 5s., and £295,811 19s., respectively, and the expenditure of each year was as follows:—

For the relief of the poor £250,905 7 £291,614 16 £218,304 17
In suits of law, removal of paupers, &c. 6,896 3 £7,318 19 £5,444 9
For other purposes 19,021 12 36,707 7

Total money expended £296,728 12 292,536 8 229,010 3

The saving effected in the whole sum expended in 1835, as compared with that expended in 1834, was therefore about 20 per cent.; and the saving effected on the sum expended for the relief of the poor was not quite 23 per cent. in 1836, as compared with the expenditure in 1834.

The number of turnpike trusts in Essex, as ascertained in 1834, is 11; the number of miles of roads under their charge is 249; the annual income in 1834, arising from the tolls and parish composition, was 24,504 l. 15s. 1d., and the annual expenditure 39,571 l. 12s. 4d.
The county expenditure in 1834, exclusive of that for the relief of the poor, was 18,474 l. 10s. 6d., disbursed as follows:—

£.  £  s.  d.
Bridges, buildings, and repairs, &c. 728 2 0
Geols, houses of correction, &c., and maintaining prisoners, &c. 10,311 17 2
Shire halls and courts of justice—building, repairing, &c. 249 5 8
Prosecutions 2,382 13 8
Clerk of the peace 1,385 7 4
Conveyance of prisoners before trial 758 5 1
of transports 297 7 0
Vagrants—appearing and conveying 315 18 0
Constables—high and special 552 2 5
Coroner 345 17 6
Miscellaneous 1,254 7 11

Total 18,847 10 6

The number of persons charged with criminal offences, in the three septennial periods ending with 1820, 1827, and 1834, were 1996, 2686, and 3537 respectively; making an average of 273 annually in the first period, of 384 in the second period, and of 576 in the third period. The number of persons tried at quarter-sessions, in each of the years 1831, 1832, and 1833, in respect to which any costs were paid out of the county-rates, were 386, 351, and 398 respectively. Among the persons charged with offences, there were committed for—

1831. 1832. 1833.
Felonies . . . . 293 319 321
Misdemeanours . . 93 93 77

The total number of committals in each of the same years was 407, 445, and 460 respectively. Among the persons charged with offences, there were committed for—

1831. 1832. 1833.
The number convicted was 323 315 337
acquitted 52 59 72
Discharged by proclamation 32 71 41
...
In 1836 at the assizes and sessions 619 persons were charged with offences in Essex. Of these 49 were charged with offences against the person, 31 of which were for common assaults; there were 74 offences against property, committed with violence; and 422 committed without violence; 1 for sending threatening letters; 8 for forging and uttering false money; 1 for killing cattle; 2 for deer stealing; and 42 for riot. Of the whole number of offenders, 446 were convicted, 123 were acquitted, and against 51 no bill was found, or no prosecution ensued. Of those convicted, 29 were condemned to death, none of whom were executed; 17 had their sentence commuted for transportation, and three for imprisonment; 133 were sentenced to transportation for various periods; 279 to imprisonment, 233 of whom for only six months or under; 2 were whipped; 5 were fined, and 6 discharged on sururies. Of the number of offenders, 447 were males and 72 females; 293 could neither read nor write; 253 could read and write imperfectly; 31 could read and write well, and only 1 had received superior instruction; the state of instruction of the remaining 11 could not be ascertained.

The number of persons qualified to vote for the county members of Essex is 11,119, being 1 in 20 of the whole population, and 1 in 7 of the male population, twenty years of age and upwards, as taken in 1831. The expenses of the last election of county members to parliament were for the inhabitants of the county £2,300, 5s. 6d., and were paid out of the general county-rate.

There are fifteen savings' banks in Essex. The number of depositors and amount of deposits on the 30th of November were:

<table>
<thead>
<tr>
<th>Number of depositors</th>
<th>£268,333</th>
</tr>
</thead>
</table>

The various sums placed in the savings' banks in 1836 and 1836 were distributed as under:

<table>
<thead>
<tr>
<th>Description</th>
<th>Depositors</th>
<th>Deposits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not exceeding £20</td>
<td>5724</td>
<td>£37,301</td>
</tr>
<tr>
<td>£20 to £75</td>
<td>2157</td>
<td>75,295</td>
</tr>
<tr>
<td>£75 to £200</td>
<td>1150</td>
<td>78,931</td>
</tr>
<tr>
<td>£200 to £500</td>
<td>145</td>
<td>56,139</td>
</tr>
<tr>
<td>£500 to £1,000</td>
<td>221</td>
<td>37,734</td>
</tr>
<tr>
<td>£1,000 or over</td>
<td>94</td>
<td>54,657</td>
</tr>
</tbody>
</table>

Total | 9390 | 302,961 |

Education — The following summary is taken from the parliamentary returns on education, made in the session of 1835:

<table>
<thead>
<tr>
<th>Schools</th>
<th>Scholars.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>99</td>
</tr>
<tr>
<td>Number of infants at such schools; ages from 2 to 7 years:</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>684</td>
</tr>
<tr>
<td>Females</td>
<td>736</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>932</td>
</tr>
<tr>
<td>Daily schools</td>
<td>1675</td>
</tr>
<tr>
<td>Number of children at such schools; ages from 4 to 14 years:</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>13,359</td>
</tr>
<tr>
<td>Females</td>
<td>12,938</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>4,653</td>
</tr>
<tr>
<td>Total</td>
<td>20,660</td>
</tr>
<tr>
<td>Schools</td>
<td>1193</td>
</tr>
</tbody>
</table>

If we assume that the population between the ages of 2 and 15 has increased in the same proportion as the whole population since 1821; and that the whole population has increased in the same ratio since 1831 as during the ten years preceding that period, we find that the number of children between the ages of 2 and 15 residing in Essex in 1834 was 109,911.

Thirty-seven Sunday-schools are returned from places where no other schools exist, and the children (1513 in number) who are instructed therein cannot be supposed to attend any other school; at all other places Sunday-school children have opportunity of resorting to other schools, and therefore it is known they have been thus far created. At a few of the Sunday-schools some scholars are 16 and 17 years of age. Making allowance for these two causes therefore, it appears that perhaps not more than one-half of the children between the ages of 2 and 15 are receiving instruction in this county.

Maintenance of Schools.

<table>
<thead>
<tr>
<th>Description</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>5</td>
<td>235</td>
<td>240</td>
</tr>
<tr>
<td>Daily schools</td>
<td>93</td>
<td>313</td>
<td>406</td>
</tr>
<tr>
<td>Sunday schools</td>
<td>213</td>
<td>301</td>
<td>514</td>
</tr>
</tbody>
</table>

The schools established by Dissenters included in the above statement are:—

<table>
<thead>
<tr>
<th>Schools</th>
<th>Scholars.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>9</td>
</tr>
<tr>
<td>Daily</td>
<td>31</td>
</tr>
<tr>
<td>Sunday</td>
<td>91</td>
</tr>
</tbody>
</table>

The schools established since 1818 are:—

<table>
<thead>
<tr>
<th>Schools</th>
<th>Scholars.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant and other daily schools</td>
<td>647, containing 18,335</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>230, containing 18,581</td>
</tr>
</tbody>
</table>

One hundred and one boarding-schools are included in the number of daily schools given above. No school in the county appears to be confined to the children of parents of the Established Church, or of any other religious denomination, such exclusion being disallowed in almost every parish, but particularly in schools established by Dissenters, with whom are here included Wesleyan Methodists, together with schools for children of Roman Catholic parents.

Lending libraries of books are attached to forty-five schools in this county.

ESSEX, EARLS OF. Walter Devereux, first earl of Essex, the son of Sir Richard Devereux and Dorothy, daughter of George, earl of Huntington, was born in Caermaenihshire, at the castle of his grandfather, Walter Vauxmont Hereford, about the year 1540. He became a formidable supporter of the cause of Vincent Hereford and Lord Ferrers of Chartley in his sixteenth year, and was early married to Lettie, daughter of Sir Francis Knolles. When the rebellion, headed by the earls of Northumberland and Westmorland, broke out in 1550, he was a considerable body of troops, and, with other forces, compelled the rebels to retreat into Scotland. The courage that he displayed during this war recommended him to Queen Elizabeth, who had ever esteemed his loyalty and superior intelligence: in gratitude for the service that he had rendered her, she conferred on him the order of the Garter, and created him earl of Essex (1574). He now became so great a favourite with the queen, that Leicester and others about the court, jealous of his increasing influence, encouraged Essex to enter upon a scheme for disturbing and weakening the government of Ulster. He had for some time contemplated such an expedition, and having been persuaded to take the command, embarked from Liverpool in August, 1573, in company with Lord Darcy, Lord Rich, and other persons of distinction. He was contracted to finish one half of the expense of the undertaking, in consideration of which he was to have one half of the colony as soon as it was established. His arms at the outset met with various successes; but after a time his English friends deserted him, and their loss, together with the severity of the weather, multiplied difficulties round him. He was obliged to re-sole the government of Ulster, which he had previously resigned; and he was compelled to make peace with O’Niel when his pursuit of the rebels under that leader gave every prospect of success. His desire was to give the religion or each of his followers, and O’Niel had nearly dispossessed the Scots, who had invaded the western islands in his territory, and with no higher title than that of captain was made to serve at the
and his confederates were executed. The opposition of the Cecili to the councils of the earl of Essex was renewed in 1596. Lord Howard, then lord admiral, advised the queen again to invade Spain, a proposal which Essex warmly seconded; Burleigh, on the contrary, denounced the scheme as unpromising and imprudent. The queen gave her consent to the expedition, which was to be conducted by Howard, plundered and harried; fifty-seven Spanish ships of war and merchantmen were taken or destroyed; and the Spanish government suffered considerable loss. But though the enterprise was successful, and commanded with great spirit and energy, the English government were but little expeditions were of the same result: the bills incurred payable for the expense incurred. After some trifling attacks upon the coast of Spain, the fleet, which had been absent little more than two months, returned to England. The enemies of Essex had endeavoured, during his absence, to diminish his popularity to his prejudice, but his publication of the 'Censure of the Omissions in the Expedition to Cadiz' completely reinstated him in her favour. He continued to meet with disappointments in his endeavour to obtain official situations for his friends, but he himself created Master of the Ordnance. In July, 1597, Essex, as commander-in-chief, with Lord Thomas Howard as vice-admiral, and Sir Walter Raleigh as rear-admiral, sailed against the Spanish fleet, with a view also of making conquests among the Azores. The English ships, however, met with the same fate as before, and were driven back to Plymouth. In August they again set sail, and though they could not burn the Spanish ships which they now found in harbour, they succeeded in capturing some of the amount of 100,000L., with which booty they returned, and the queen gave him a box on the ear, and bade him 'go and hanged.' Essex immediately seized his sword, and the lord admiral stepping in between, he swore 'that he neither could nor would put up with an affront of that nature, nor would have taken his hand from the hands of his sovereign.' He withdrew from the court, and some months passed before he would make any submission, or suffer a reconciliation to be effected. His friends roused his spirit from this depression. It was the last measure of the government. The Earl of Essex, one of the principal advisers of the Spanish court, was committed to prison. In 1598 a quarrel occurred between the queen and Essex, who, having differed from her respecting an Irish appointment, angrily and contemptuously threw his hat upon her in the presence of several of the ministers. The queen, understanding that he loved her, gave him a box on the ear, and bade him 'go and hanged.' Essex immediately seized his sword, and the lord admiral stepping in between, he swore 'that he neither could nor would put up with an affront of that nature, nor would have taken his hand from the hands of his sovereign.' He withdrew from the court, and some months passed before he would make any submission, or suffer a reconciliation to be effected. His friends roused his spirit from this depression. It was the last measure of the government. The Earl of Essex, one of the principal advisers of the Spanish court, was committed to prison.
that his general popularity was undiminished. So deep was his impression of resentment against those whom he conceived to have biased the queen against him, that he listened to the rash and desperate advice of Cuffe, his secretary, to remove Cecil, Cobham, and Raleigh by force from the queen's counsels. In order to strengthen his interest, the garter was put on to him, and two persons who were discontented with the queen or her advisers. With the same view, he courted both the Roman Catholics and Puritans, and a concourse met daily to hear sermons in his house. The multitude that attended the delivery of these discourses could not fail to attract the attention of the vigilant government. Essex was warned to be careful of his safety, and his attendance was required before the council. At this summons he took alarm, fearing a renewal of his imprisonment, and consequently the destruction of himself; and he determined to pre- emptice his proceedings on the following morning (Sunday, February 6, 1600-1); and during the night messengers were sent in all directions to acquaint Essex's friends that his life was threatened by Raleigh and Lord Cobham. In consequence of this intelligence, Lords Sandys and Montague, the earls of Rutland and Southampton, with nearly 300 other gentlemen, assembled at Essex House, where it was divulged that Essex had resolved at once to rid himself of his enemies by forcing his way to the queen, and informing her of the plot, and in that case to take the long arm of his influence with her majesty. Essex having shut up within his gates the lord keeper, the chief justice, and others whom the queen, aware of what was passing, had sent to inquire into the cause of the tumult, proceeded with his insurrectionary measures. The night was spent in council. In the morning, taking his wife, his elder daughter, the earl of Northumberland, his two younger children, the earl of Middlesex, and many others, he marched to Whitehall, and a skirmish ensued, in which he was twice shot through the hat. At length he reached Essex House, but after a short defence he was compelled to surrender himself, and with Lord Southampton was committed to the Tower: the rest of the conspirators, however, continued his party. He was tried for treason in Westminster-hall on the 19th of February, condemned, and executed 25th of the same month. (Criminal Trials, vol. i.)

A sketch of the character of Essex has lately appeared in an article in the Edinburgh Review (vol. lxx., p. 21), which also displays the ingenuity of Lord Bacon towards his zealous friend and patron. We extract the following remarks:—Nothing in the political conduct of Essex entitles him to esteem: and the pity with which we record his misfortunes, is the same pity that leads us to consider that he put to hazard the lives and fortunes of his most attached friends, and endeavoured to throw the whole country into confusion for objects purely personal. Still it is impossible not to be deeply interested for a man so bred in the profession of arms; so fond of martial exploits. He conducted himself towards his sovereign with a boldness which was so found in no other subject, conducted himself towards his dependants with a deficiency as has rarely been found in any other patron. Unlike the usual herd of benefactors, he desired to inspire not gratitude but affection. He tried to make those whom he befriended feel towards him as towards an equal. His mind was ardent and susceptible, and naturally disposed to the admiration of all that was noble and grand. He left one son (of whom we give an account in the next article) and two daughters. Frances married first the earl of Hertford, and afterwards the duke of Somerset. Dorothy was the wife first of Sir Henry Shirley, and lastly of William Stanley, lord Stanley of Northamptonshire. Robert Devereux, third earl of Essex, was born in Essex House, in the Strand, in 1592. He was sent to Eton by his grandfather, who, after his father's death, received him into his house; and in 1602 he was removed to Morton College, Oxford, where the warden, Mr. (afterwards Sir Henry Savile, who had been an intimate friend of his father, took charge of his education. He was restored to his hereditary honours in 1603, and three years afterwards was unhappily married to lady Frances Howard, a child being more than thirteen years old. The young marriage couple being too young to live together, Essex was sent to improve himself abroad; while the bride, who was celebrated for her beauty, continued with her mother. It was four years before he returned to claim his wife, and in the mean time she had contracted so great an affection for lord Rocheter, afterwards earl of Somerset, that until she was compelled by her father, she could not be brought to cohabit with her husband. The union never was a happy one. They separated, and the king instituted proceedings against him praying for a separation on a real or pretended charge of physical disability. A divorce was granted, and the lady was soon after married to lord Rocheter. The slir thus cast upon Essex drove him to the retirement of his country-house and the pursuit of rural occupations. After some years however, a solitary life became irksome to him. Tired of inaction, he joined lord Oxford in 1620, raised a troop, and marched with the Elector Palatine in the war against Holland. In the winter of 1621 he returned to England, and endeavoured to induce the government to render him unpopular at court; indeed the reception that he met with at home was so little agreeable that he willingly renewed his military avocations abroad during the two following summers, and in 1625 again raised a troop, with which he sailed to the United Provinces. His disposition and capability for military service now struck the king, and he was appointed vice-admiral of a fleet which was employed in a fruitless expedition against Spain. He engaged in another expedition in the Low Countries, and was made admiral of the fleet. In 1630 he was the second choice of a wife (the daughter of Sir William Paulet) he was scarcely more fortunate than in his first. It is true indeed that the lady soon after her marriage bore a son, which Essex owned and christened after his name, but her beauty and fidelity, which had been the cause of her fidelity, and after much mutual estrangement, on the one side for inconstancy, on the other, a renewal of former charges, a separation took place. The child died at the age of five, and Essex never showed further inclination to mar- riage. He was tried for treason by the queen. At the time of his appointment in the fleet that sailed to Holland in 1635, he spent his time either in his house at Charley, or in London. His inclination to seek popularity among the presbyterian was evident and undisguised; nevertheless the king, who was very well disposed towards him, did not take measures against him, but when the Scots attacked the English settlements on the Borders, the king ordered him to march against the Covenanters (1639). In 1640 he was one of twelve peers that signed a petition that a parliament should be called and an attempt made to settle the difficulties of the state without further bloodshed. He was also one of the commissioners that signed a treaty with the Scots; and when, at the opening of the Long Parliament, the king saw that it was necessary that he should endeavour to conciliate the presbyterian party, he made Essex lord chamberlain. It was the wish of many of the royalists that Essex, who was so popular with the army, should also have been placed at the head of the army, but Charles, who disliked him on account of the roughness of his manner, and doubted the firmness of his attachment to him, refused to appoint him, and would yield their respects and but that Essex, who, with the greater part of the army, was quartered at the country house of the earl of Essex, near Edgcott, did also take Reading (1642), but on account of a disease with which his troops were infected, he was obliged to abandon any further attack; at which the disappointment of the parliamentary leaders was so great, that they nearly dissolved his command. On the recovery and reinforcement of his soldiers he triumphantly entered Gloucester, from which he had driven the king away, surprised Gressenee, and after fighting courageously on the double battle of Newbury, succeeded in opposing, and had established his new-marched army, which was supposed to be so numerous in Cornwall, in the hope of increasing his forces he marched to that county pursued
by the royalist troops; the number of adherents however had been exaggerated, his expectations were disappointed. His designs were frustrated, and the partisans, the scarcity of provisions began to be severely felt. At this crisis the king proposed a treaty; but Essex had no authority to make any agreement without the sanction of his parliamentary masters; and as the royalists, finding that their plan had failed, ordered them to press their advantage, after some of his troops had abandoned him, he was obliged to escape by sea from Fowey. Having sailed from Plymouth to London, he once more collected an army, and was placed at its head, but an illness compelled him to quit his command. When he returned to London he found a state of confusion and distrust that scarcely could be exceeded. At a meeting held at his house it was proposed to impeach Cromwell, but this served no other purpose than to irritate that leader. The independents were at first repelled by the lawless parlement of the court; but they afterwards, to comply with the requisition of the king, unfriended his party, and treated the it as a state of grace. They had to see the privileges of his parliament to hold any command in the army; thus Essex ceased to be parliamentary general. It was voted that for his services he should be raised to the rank of a duke, and be granted a pension of 10,000l. a year. He did not however live to enjoy these honours, being carried off by a sudden and violent illness in the fifty-fifth year of his age. He was publicly interred in Westminster Abbey.

The chief defects in his character were indiscipline and violence of temper; but the state and manner of his imprisonment were more serious than from bad intent. His bearing was always manly, and his courage has never been impeached. At his death the title became extinct. (Hume's History of England. Biographia Britannica; Biographia Universelle.)

A part of the Wurttemberg province of the Neckar, as well as for the hills of Esslingen, lies in a fine and fertile country on the banks of the Neckar, surrounded by heights crowned with forests and vineyards, in 49° 44′ N. lat., and 9° 19′ E. long. It is divided into a small number of districts, and the favourite residence of some of the emperors. The inner town has massive walls and towers round it; and the five suburbs, one of which stands on an island in the river, while another is attached to the old bury which lies upon a hill. From a distance it presents a fine prospect, and the view of St. Mary being distinguished by its fine Gothic spire, a handsome town-hall, an hospital richly endowed with the property of some suppressed religious houses, a high school, the head seminary of the kingdom for educating teachers, an orphan asylum, several elementary schools, and a population of about 6250, of whom about 100 are Roman Catholics and 100 Jews. Esslingen has manufactures of woolens, cotton and woollen yarns, wine, tanned iron and tin ware, paper, &c., and a good trade in agricultural produce. The origin of estate and town of Esslingen is very ancient. The Esslingen-Gebiet, a succession of hamlets scattered along the heights between the town and Rothenberg, and carried up to the very summit of the range.

ESSLINGEN, or ESSLING, is likewise the name of a small village of about 280 inhabitants, in the circle of the Lower Mannhartsberg, in Lower Austria, about seven miles east of Vienna. It is connected by historical recollections with the adjacent village of Aspern which lies to the west of it. The ground between these two places was the scene of a battle, in which the Austrians, who began on the 21st and terminated on the 22nd of May, 1809, when the latter remained in possession of Aspern, and the former of Esslingen. By the Aus- trians the conflict was therefore called that of Aspern; but by the French it was called that of Esslingen, from which village Marshal Massena covered the retreat of Napoleon's forces, and after- wards derived the ducal title bestowed upon him by the French emperor.

ESSIGNON, Latin Exsoigna, French Essigny, or Essain- nes, derived from the Latin Exsoignare, to extort, but see Du Cange, in voc. Summa), is the allegation of an excuse for non-appearance by a person summoned to answer in action at law, or to perform service at a court baron. There are various sorts of excuse, such as illness, illness among thriving floods, &c.

A party might assiggn himself three times by sending a substitute to explain the reasons for his non-appearances, and it formerly served as an impudence or a craving for a longer time by a defendant to make answer in real and stated actions.

Essignon day of the Term. The first return day in every term was, properly speaking, the first day of the term (until February 1, 1612, when the first return day was in February), on which day the courts sat to take essignons or excuses from such as did not appear to the summons or the writ; wherefore it was called the essignon day.

The essignon or general return day is now regulated by 1 and 2 of William IV. It is then called the first term day, and is generally returnable before any of his majesty's courts of King's Bench, Common Pleas, or Exchequer, respectively, on general return days, may be made returnable on the third day exclusive, before the commencement of each term, or on any day, not being Sunday, between that day and the third day exclusive before the last day of the term; and the day for appearance shall be the third day after such term. ESTATE, in law, signifies that title or interest which a man has in lands, tenements, hereditaments, or other effects. Terms of land, lands, and hereditaments held or enjoyed for an estate of freehold; or personal, comprising interests for terms of years in lands, tenements, and hereditaments, and property of every other description. Personal estate (Chatres) goes to the executors, and is primarily liable for payment of debts. Real estate may be considered under three heads:—(1) the quantity of estate, i.e., the amount of interest in the owner; (2) the time when that interest is to commence; and (3) the quality of estate, or the mode in which it is to be enjoyed.

1. All real estates not being of copyhold tenure (Copy- hold), or what are called customary freeholds, are either of freehold or less than freehold. The former may be divided into two kinds; freeholds of inheritance, and free- holds of lease. A freehold of inheritance or fee simple is the right of having and enjoying the whole and entire property of a further subdivision, into inheritances absolute, called fees simple, and inheritances limited, called qualified or base fees, and fees conditional. A freehold of inheritance absolute or fee simple is the largest estate which the law allows a person may have in his whole body, and whom he pleases in his lifetime by deed or by will, and if he dies without making any disposition, it descends to such of his kindred as the law marks out as his heir.

A qualified or base fee has some qualification or limit annexed, while a fee simple stands in the instance of a grant to A and his heirs tenants of the manor of Dale. Whenever A or his heirs cease to be tenants of that manor, their estate is entirely determined, though during its continuance the proprietor has the same rights and privileges as if he were absolute tenant in fee simple.

A conditional fee at common law was a fee restrained to some particular heirs exclusive of others, as to a man and the heirs male of his body, by which limitation his lineal heirs female and collateralists were excluded; and this is the way in which the word is generally understood. In the case supposed, had no heirs male of his body, or if, after a male child was born, no alienation were made, the land should revert to the donor on the failure of heirs male of the donee's body: in fact, for all intents and purposes, it was a fee simple, on condition that the donee had male issue; for it is a rule of law, that when any condition is performed it is thenceforth entirely gone, and the thing to which it was annexed becomes absolutely and wholly unconditional. The nobility, however, being anxious to preserve a title for a future generation, procured the Stat. Westm. the Second, 13 Ed. 1. c. 1, commonly called the Statute de Donis Conditionalibus, to be made, which enacted that the will of the donor should be observed, and that the land should go to the donor, his wife, or any other person or persons, whose admission to the land should revert to the donor. Thus the donor acquired an estate in reversion, which could only be allowed, consistently with the nature of estates in reversion, by considering the conditional fee to be changed into a limited, or as it is called, a conditional fee simple.

This kind of estate was called an estate tail, from the word tailors, to cut, being as it were a portion of the whole fee. Means were soon however discovered by the ingenuity of the lawyers to enable the donor and his heirs of the specified description to cut off the entail, as it was called. (Entrench, Fine, Recovery.)

A freehold, not of inheritance, is an estate which the owner has for his own life only, or the life of some other person, or until the happening of some uncertain event. The following are instances. A gift to A until B returns from Rome; but if the gift had been to A and his heirs
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until B returns from Rome, the estate would have been a qualified or lose fee; and if B had died without returning from Rome, would have become a feo simple absolute. Some freeholds not of inheritance, arise from operation of law, as tenant in tail after possibility of issue extinct, which is where an estate is limited until the heirs of his body be bequeathed on the body of B his wife, which is called an estate tail special (as distinguished from an estate tail general, i.e. to A and the heirs of his body, without specifying the woman from whom they must spring). If B dies without children, and he is no longer tenant in tail, but tenant in tail after possibility of issue extinct, and is regarded by the law, as to the duration of his estate, as simple tenant for life. As to tenant by courtesy and tenant in dower, see Courtesy and Dower.

There are three freeholds or other estates to which a freehold or personal right is sometimes coupled, which are called

1. Estates for years (which includes an estate from year to year) is personal property, and, like other chattels, [Chattels], upon the death of the owner, without having disposed of it in his Will.

An estate at will arises where a man lets lands to another expressly at the will of both parties or without limiting any certain estate; either party may put an end to the tenure, though, for the sake of general convenience, the estate is granted for an unknown term, for the purpose of rendering a six months' notice necessary to their determination. An estate by sufferance arises where a tenant, who has entered by lawful title, continues in possession after the determination of his estate. An estate by sufferance has determined at all times, the interest of the lawful owner, though, after acceptance of rent, the law would consider it a tenancy from year to year, as in the case of a tenancy at will.

Neither of these two last estates confers any power of alienation. All these estates, real and personal, freehold or less than freehold, freeholds of inheritance or not of inheritance, may become subject to another qualification, and be called estates upon condition, being such whose existence depends upon the happening or not happening of some uncertain event whereby the estate may be either originally created or enlarged or finally defeated. [Condition; Mortgage.]

2. Estates are either in possession or in expectancy. The former kind of estate requires no examination here. The latter, involving some of the nicest and most abstruse learning in English law, are divided into estates in remainder and reversion, and by executory devise or heir imprisonment.

Remains of Tenure. A remainder or remainder in reversion is a remainder that may or may not arise, according to the happening or non-happening of some condition. A remainder by executory devise or bequest is such a limitation of a future estate or interest in lands or chattels as the law admits in the case of a will, though contrary to the rules of limitation in conveyances at common law. It is only an indulgence allowed to the grantor to have a waiting estate, otherwise all the words of the will would be void; for wherever a future interest is so limited by a will as to fall within the rules laid down for the limitation of contingent remainders, such an interest is not an executory devise, but a contingent remainder. [Will.]

3. Estates may be enjoyed in four ways; in severity, in joint tenancy, in coparcenary, and in common.

An estate in severity is when one tenant holds it in his own right without any other person being joined with him. An estate in joint tenancy is when two or more persons hold the estate, and the survivor is entitled to the whole. An estate in coparcenary is when two or more persons hold the estate, and the survivor or survivors.

An estate in coparcenary is when an estate of inheritance descends from the ancestor to two or more persons, who are called coheirs, and amongst coheirs there is no survivorship.

An estate in common is when two or more persons hold property, by distinct titles and for different interests, but by unity of possession.

A tenant may, by the last-mentioned modes of joint and undivided possession may be put an end to by the parties interested, either by prescribed modes of conveyance or by partition. [Partition.]

Estates are also legal or equitable. It is a legal estate when the owner is in the actual seisin or possession, and also entitled to the beneficial interest himself or in trust for some other person. An equitable estate is when some other person, not the owner himself, is entitled to the beneficial interest of the property of which that other is in possession. The power of the beneficial owner over his equitable estate is as complete as if he were possessed of the legal estate. [Trust; Equitable.]

EST, HOUSE OF, one of the old titles of modern princes of Europe, and assigned to those which have retained sovereign power to the present time, the house of Savoy perhaps excepted. Some chroniclers, such as Pigna, have endeavoured to trace back the genealogy of the house of Este in the fifth century of our era when they had the marches of Atus, Annetach, and Tiburins mentioned as princes of Este, Vicenza, and Feltre. But to pretend to ascertain the lineal succession of these princes down to the ninth century is a matter at least very dubious. The more probable and judicious Muratori, editor of the ancient history of Tuscany, has traced the ancestry of the Este to the dukes and marquises which governed Tuscany as a great imperial fief under the Carolingian emperors, and who were probably, like most other great Italian feudatories at that time, of Longobard origin. Some old chroniclers, such as Marco Equiccola, in his History of Tuscany, state positively that they were Longobards, and related to the Longobard dukes of Spoleto. The succession, however, of these marquises or dukes, among whom are registered two of the name of Adalbert, in the ninth century, and to whom the Este was entitled, by the name of Albertus, who is styled marquis, but of whom little is known, and who died about A.D. 917. He left, however, twosons, Guido and Lamberto, who were stripped of their fiefs by Hugo and Lotharius, kings of Italy. A son or nephews of Guiseppe Este, named Oberto, took the part of Berengarius II., who was elected king of Italy about A.D. 950; and this Oberto was possessed, either by inheritance or through the favour of Berengarius, of several fiefs in Tuscany and Lignamaria. After this time, as the whole possession of the Este was in the hands of Albertus and his line, it is considered that Oberto, who was one of the Italian nobles who repaired to Otho to offer him the crown of Italy. Otho, on his exaltation, appointed Oberto comes palatinatus, which was one of the first dignities of the kingdom, and gave him in marriage his eldest daughter. Of this marriage a son named Oberto died about the year 972, leaving two sons, Adalbert and Oberto II., the latter of whom was lord of Lignamaria and of the county of Obertengo in Tuscany. Oberto took the part of Hardouin, marquis of Juvia, against Henry of Bavaria, for the crown of Italy.

A son or nephew of the second of these sons, named Oberto, who in his turn was succeeded by his son Alberto Azzo I., who in turn was succeeded by his son Alberto Azzo or Albertazzo II. This Albertazzo, besides his paternal fiefs of Lignamaria and Tuscany, inherited also from his uncle Ugo the fiefs of Este, Rovigo, and Casalgrande in Italy. This Albertazzo was married to Hardouin, the princess of Feltre, and by her was enfeoffed of the duchy of Carinthia and the march of Verona by the emperor Henry III., count and governor of Milan; and soon after he married Kunitza, or Cunegonda, of the great German house of Wolf, and sister to Wolf III., on whom the emperor Henry had bestowed the duchy of Carinthia and the march of Verona. Wolf III., dying without issue, his inheritance fell to his sister's eldest son by Albertazzo, who took the name of Wolf IV. This Wolf IV. was made duke of Bavaria about 1079, and from him the line of Brunswick and Hanover, known also by the name of Wolfstein, is descended.

Albertazzo having lost his German wife, married Garisenda, countess of Maine in France, by whom he had two sons, Folco and Hugo. To Folco he left his Italian estates, and Hugo inherited the French property of his mother. Being afterwards killed in battle, it was averred by the recorder that his father's death was caused by his half-brother Wolf for a share of his paternal inheritance; but after a long contention, an arrangement was made by which Folco retained the greater part of the Italian estates, including the fief of Este, which title was granted to him. Like his father, he assumed the title of marquis of Este, from the town of that name, by which his house was designated ever after. The town of Este, built near

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the ruins of the ancient Ateote, lies in the Venetian state, north of the Adige, in the province of Padua. The emperor Frederick Barrossa, at a court held at Verona, after a series of visits to the imperial cities of the Marquises of Milan and Genoa, which were then merely nominal, as the two cities had become free; yet the emperors would not discontinue the prerogative of appointing the titular marquises of those former imperial jurisdictions. The Princes of Este, after Frederick was driven from Padua, took the House of Este over Ferrara was first laid. The family of Adelardi had long been the popular leaders at Ferrara, and enjoyed the chief authority in that community. Marchesella, the last offspring of this family, was betrothed by her uncle and guardian Girolamo Este to one of the Torelli, a rival family. But the girl was carried away and compelled to marry Azzo of Este, the son of Obizzo, and from that time the Este were considered as citizens of Ferrara. 'A veil has been thrown over the whole transaction, which tends to imply that fraud or violence had been committed.' (Litta, *Famiglie celebri Italiane*).

This Azzo, styled the Fifth, died about the end of the twelfth century, and was succeeded by his son Azzo VI., who was elected in 1208 by the citizens of Ferrara as vicar or lord of that city, with power to appoint his successor. 'This,' says Litta, 'was the first example of a free Italian city giving itself over to a lord, and the beginning of those numerous principalities into which Italy became divided.'

Aldobrandino succeeded his father Azzo VI. in 1212, and was in attempt to take the Este of Fidenza, for Ercole Este, who partook with the Pope against Frederick II., for the Este were naturally of the Guelf party. He was mainly instrumental in the fall of the tyrant Ecelino: he fostered learning, patronized the Provençal troubadours whose name was adopted by the Este of Fidenza, who had settled in that city. He was succeeded by Rinaldo, and the latter by Obizzo in 1252. Obizzo was elected lord of Modena in 1258, and of Reggio in the following year, according to the prevailing fashion of the Italian cities at that period. These lordships of Ferrara, Modena, and Reggio, however, were not held by the Este in undisputed possession, for they were repeatedly invaded and recovered during the frequent wars of the Italian states in the fourteenth century. While the family of Este were acquiring a princely dominion, they kept up the style of a prince and were hospitable on a princely scale. About 1293 the Paduans took possession of the town and territory of Este by conquest, and annexed it to their community. It afterwards, in 1405, passed into the hands of the Venetians. (Alessi, *Ricerche Istorico-Critiche delle Armi d'Italia*.)

Nicholas, called 'the Lame,' one of the successors of Obizzo, was vicar of Ferrara from 1377 to 1389: he fought for the pope against Barnaba Visconti, duke of Milan. He was succeeded in 1389 by his brother Albert, and Albert by his son Ulrico, who died leaving two younger sons, and other illegitimate sons yet in their infancy, and several natural sons grown up, to one of whom, Lionel, he bequeathed his dominions. Lionel proved a good prince: he restored the university of Ferrara, and after nine years of a mild and liberal administration he died in 1450, leaving the government of the state to his brother Borso, who was illegitimate like himself. Borso was one of the most distinguished princes of his age. He was a patron of arts and letters, and was generous, enlightened, and just. He recalled two troubadours, and Sigismund of Luxemburg, who, treated them with brotherly affection, and in order to secure the succession to them after his death, he abstained from marrying. In 1422 Borso received from the emperor Frederick III. the title of duke of Modena and Reggio and count of Ravigo; and in 1421 pope Paul II. gave him the title of duke of Ferrara, upon which town the Roman see claimed a right of patronage. Borso died soon after, leaving a large and prosperous state to his brother Ercole. 'More fortunate than Lorenzo de' Medici, who lived in the same age, he enterred the violent storms of opinion; he ruled over a contented and submissive populace, and while the conspiracies against Lorenzo were looked upon as acts of patriotism, those against Borso were considered as private plots, the result of personal envy and malice. Another occasion to expel, in 1465, to punish several conspirators with all the severity of the laws, he did not lose on that account the veneration of his subjects. He enjoyed a great reputation for uprightness, and his fame spread so far that he received presents from some Italian princes, who believed that he was king of Italy.' (Litta, *Famiglie celebri Italiane*).

His successor Ercole I. was likewise a man of considerable talents and liberal dispositions, but not equally remarkable for that wary and cautious policy which has been stigmatized as peculiarly Italian, but which was in reality indispensable to the Italian princes in order to protect themselves from the overbearing violence of foreign invaders. He succeeded his brother in 1465, and in 1471 entered into the suicidal act of calling the French into Italy. Ercole checked the fury of Louis XII., who, after he had driven the Sforzas from Milan, was bent on exterminating all the other Italian princes. Ercole was fond of travelling; he patronized the various halls of the University, and encouraged tournaments, festivals, and hunting parties. He gave the first theatrical entertainments exhibited at Ferrara, where the *Menademi di Piaetus* was performed in 1486. His court was frequented by Bojardo, Colleuccio, Taldeho, Guarino of Verona, and others, who had bated the common Greek MSS. to be translated, and had a Hebrew press established at Ferrara in 1476.

Alfonso I., son of Ercole, succeeded him in 1503. He married the daughter of Pope Alexander VI. (Borgia, Lucrezia.) Alfonso had a long and troubled reign. He was attacked by Julius II. and the Venetians; he lost Modena and Reggio, and the Venetians also threatened Ferrara. The death of Julius afforded him some respite. Leo X. continued to withhold Reggio and Modena from him, and made also other overbearing demands. Alfonso, at the end of his reign, was reduced to only a few dozen galleys, besides the Este estates in Ferrara and Modena, all subject to the Medicis, and that he was at peace with Charles V., who by an imperial decree dated 21st April, 1521, confirmed the rights of the house of Este over Modena, Reggio, and Rubiera, upon the duke paying him 150,000 sequins; and thus Alfonso was restored to the Este possessions. Alfonso was succeeded in 1529 by his son Ercole II., who in 1530 was elected pope. He was succeeded by Ercole II., and the latter by Alfonso III., who was unfavourably known by the misfortunes of Tasso, which however the poet brought upon himself. Litta is of opinion that Tasso was in love with Eleonora the duke's sister, and that her sister Lucrezia was in love with him. In 1575 Tasso was sent away from Ferrara, his papers were seized, and among them were found poems with such images and descriptions as ought never to have been written.' Tasso was subsequently confined to the madhouse of St. Onofrio, but he was at length after seven years, by the intercession of Vincenzo Gonzago, prince of Mantua, who came to Ferrara for that purpose. (Tasso.) Alfonso II. dying in October 1597, without issue, Pope Clement VIII. immediately sent Cardinal Aldobrandino to Ferrara to conduct the marriage of Lucrezia Este to Duke D'Este, Alfonso's cousin and heir, with Agostino Litta, a rich and influential man. Lucrezia was maid of honour to the queen of France, and on the death of her father, was assigned to the service of his widow. Lucrezia married a second time in 1579, with Don Francesco Carotenuto, son of Alfonso I. and father to Cesare, on account of the share he had taken in the transactions of 1775 relative to Tasso, disliked Cesare also. Cardinal Aldobrandino having offered her the title and revenues of the dukedom of Ferrara in the Romagna, she signed a marriage convention, by which she gave up, in the name of the house of Este, Ferrara, Comacchio, and their dependencies, to the see of Rome. Cesare transfixed his court to Modena, and Lucrezia died at Ferrara a few days after the entrance of Taddeo Pamo into the city. (Tasso.) Cesare was created a marquis of the Romagna, which, under the house of Este, had a population of 60,000 inhabitants gradually became reduced to 20,000.

Cesare, duke of Modena and Reggio, died in 1528. His son Alfonso III., who had remained as hostage at Ferrara, was released and came to Ferrara, and shown in 1560, when he was 19 years old. In 1619 he caused Ercole Pepoli to be assassinated at Ferrara. Stung by remorse, he abdicated the ducal crown soon after his father's death, and became a Franciscan monk. He distinguished himself as a zealous preacher, and founded several convents. 'But says Litta, 'he was still a lion under the coarse tunic and hood. He was treated by the other monks with all the deference due to his rank, but was closely watched to prevent his doing mischief.' He died in 1644, in a convent in the mountains of Garfagnana, which he had founded.'
son Francis I. was not much better than his father. He affected a great zeal for religion, had his food only veined with wine and he entered into the debates of the council of Trent. In 1566 he was at the congress of Fornovo, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the council of Trent, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the congress of Fornovo, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the council of Trent, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the congress of Fornovo, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the council of Trent, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the congress of Fornovo, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church. In 1569 he was at the council of Trent, where he signed the bull of Pope Pius V., declaring the heretics to be subjects of the state of the church.
to show if they were with child, that the monarch might not be imposed on by fathering a spurious offspring; and because many having been brought up in low life, and fed on coarse, strong, and indigestible food, they had a copious and strongly odorous perspiration, which is the result from plebeian fare. Mordecai, Mordeesi the Jew (chief), having refused to do reverence to Haman, the chief minister and favourite of Ahaseurus, he, with all the other Jews from Babylon, then dispersed throughout the Persian empire, were by Haman devoted to destruction, and the royal mandate being accordingly issued to destroy, to kill, and to cause to perish all Jews, young and old, little children and women, in one day, and to take the spoil of them for a prey (ver. 13), the king and Haman sat down to drink; but the sickle tyrant, influenced in the mean time by the notorious detestation he had for Mordecai, and by the reflection that Mordecai had discovered a conspiracy against his life, was induced to hang his favourite Haman on a gallows thirty yards high, which that minister had prepared for Mordecai. He then promoted Mordecai to the highest honours in the empire, yielding to the influence of the fair Jewish princess and of Mordecai, he hastily issued orders empowering all the Jews to destroy, to slay, and to cause to perish all the people that would assault them, both little ones and women, in one day; throughout all the provinces of King Ahaseurus, and so take the spoil of them for a prey (ver. 12, 13), so that the Jews smote all their enemies with the sword, with slaughter and destruction, and did what they would unto those that hated them (ch. ix. 5). By the special request of Esther, the ten sons of Haman were hanged on the gallows, and a great many of the Persian nobility, and eight hundred of the king's Persian subjects, and in the provinces seventy-five thousand (ix. 12, 13, 15, 16). This signal revenge of Haman's intended destruction of the Jews in Persia has ever since been commemorated (x. 21-28) on the 13th day of Adar. In the Jews' "Feast of Purim," that is, in Persia, the lots; with reference to those which, on this occasion, were cast before Haman (ch. iii. 7; ix. 26); and the lower class of Jews, like the similar class of Irish with respect to St. Patrick's day, meet the occasion with grand and pious rites. It is here worthy of remark, that the word which in the authorized version is repeatedly translated gallows, should properly be cross or tree. Hence it was that, in the first ages of Christianity, the Jews, when celebrating this feast of Purim, were accused of deriding the Christian crucifixion, in abusing and setting fire to an effigy of Haman affixed to a lofty wooden cross; a custom which, on this account, was abolished in the Roman empire by the decree of Justinian and Theodotus. It has been observed, that the death of the Jews is not derivable from the statements of this book, the inspired authority of which was doubted by several early fathers, is a detestatio of the sensuality and cruelty of such royal despotism as the king Ahaseurus. (Dr. Prideaux's Connect. the Old & New Test.; Dr. Clarke's Lectures on the Bible; Commentaries of Dr. A. Clarke and others; Lectures on the Book of Esther, by Dr. Lawson, 1809; Ezech. Remin., vol. iii; Calmet's Dict. of the Bible; Dr. A. Clarke's Writings on the Scripture History.)

ESTHONIA, or REVAL, a Russian government or province constituting one of the five provinces included in the grand subdivision of Russia in Europe, which is called the Baltic (East Sea) Provinces. It is not known by this name in the Tartar dialects, but that of Wirów, border-land, or ' Meie Man,' our lake. The ancient name is Esthonia ar, on the north, the gulfs of Finland; on the east, the government of St. Petersburg; on the south, lake Peipus and the government of Livonia; and on the west, the sea, and in the city of Reval. It was 2670 in 1320, and in 1346 sold by them to the Teutonic knights, whose grand master, the first duke of Livonia and Esthonia, acknowledged the king of Poland as lord paramount in 1561. After being an object of continued contest between the Russian and Swede, it became at length a province in Sweden in 1660. It was divided into 16 esthian counties contained 34,063, and the rural districts 205,335; in that year also the number of males was 106,363, and females 104,972.

Esthonia contains 228 small lakes, besides the northern end of lake Peipus, and the left bank of the Narova, which flows out of the Peipus into the Baltic and divides the government from that of St. Petersburg. This province has no streams, but rivulets and brooks, some of which flow under ground, and occasionally contain pearl muslces. There are sulphurous and salino springs. Though the temperature is moderate when compared with that of the adjacent provinces, the winter is of long duration, and snows and ices prevail throughout the year.

The soil, though deficient in fertility, yields more than sufficient for the maintenance of the population. Agriculturc is the principal branch of industry, and about one-fifth of the whole surface is under cultivation. There are large woods and extensive pastures for cattle, horses, and swine. The land has large rivers and streams, both of fresh and salt water, and is rich in the minerals, of which copper, lead, and iron are the most common. Esthonia has large and extensive coast, and produces abundance of hay, and has many good harbours and wide good grazing grounds. Vegetables are of universal growth, but little attention is given to fruits. The woods and forests, composed of the fir, pine, elm, birch, larch, and beech, occasionally intermixed with the oak, alder, linden, crab-apple, &c., spread over an area of about 3000 square miles; they are densest in the eastern districts of Wesenberg and Weissenstein.

Next to agriculture the rearing of cattle is the most important branch of rural industry. The native horse is small and of a blackish stature but well proportioned; a breed, which, as the Reval Kripper and Doppelklepper are in much esteem. The horned cattle are small, but afford much milk, and large droves of oxen from the Ukraine are fattened for the St. Petersburg market. Much has been done to improve the breed of sheep, and now the sheep of this country are of the German white, and have much better blackish species. Goats, swine, and poultry are reared in great numbers. The wild animals are the bear, wolf, fox, badger, marten, and squirrel; a few elk's are to be met with in the Wesenberg forests. The fisheries along the coast and lake Peipus are very productive. The importal products are stone for building, potter's clay, and gypsum; there is abundance of peat.

The majority of the inhabitants are Esthoniens: they are of Finnish descent, of diminutive stature, and have light-coloured hair, bristly beard, mossy eyes, a small, flat nose, and flattened countenance. They were sunk until late years in abject slavery. The landholders are universally of German or Danish extraction, and constitute the aristocracy of the country which are of the German white, and a few Swedes and Finns intermarried with them. In 1819, when the population amounted to 227,001, it comprised 210,240 Esthoniens, and 8836 Germans. In 1830, when it amounted to 228,000, the number of births was 16,881, and deaths 4,256. In 1833, the population of the rural districts contained 34,063, and the rural districts 205,335; in that year also the number of males was 106,363, and females 104,972.

Esthonia contains 563 estuaries, which, with the exception eight, the province of which the length, and 45 bays extending the clergy, are held by the hands of the nobility. The peasants' families are estimated at 30,000. The Lutheran is the predominant religion of the province; even the Russo-Czechs Vol. X—G
have not more than eight or ten churches in it. The superintendence of all ecclesiastical affairs in the Lutheran church is vested in the provincial consistory at Reval, and the number of parishes is 134. The department of education, which includes a gymnasium at Reval, and about fifty other schools, with about 1500 pupils, is under the control of the town of Dorpat. In 1833 the proportion of pupils to the whole population was not more than one in every 148 individuals.

The manufactures of Esthonia are extremely limited; the pessaries are clothed not only with linen but with their own hair. The only establishments of any importance are in Reval, where hats, leather, powder and starch, vinegar, and some iron ware are made. In 1830 indeed, there were but three large manufactory in the whole province, and 257 workmen of all classes, of which the greater number were located in Reval and in the islands; and brass is made on many estates as well as in the towns, and even by the farmers themselves; the distilleries of this spirit amount to nearly 400.

Reval is the emporium of trade, but for want of water communication it is not of any great extent. The exports consist of grain, brass, salt, fish, skins and hides, butter, tallow, smoked herring and salmon, and salt.

Though public affairs are administered on the same footing as in the other Russian governments, the country religion is Lutheran, and the Lutheran Church is its established constitution, among which are a provincial college or council, an inferior tribunal of justice, a consistory, and the right of making banns without a license from the government.

Esthonia is divided into four counties, viz., North-west, Reval, South-west, and North-east, formerly Harris, chief town Reval (13,000 inh.), with the islands of Nargen (250), Wrangel (690), Rokshaer, Maluas, Ramaosar, the Roogs, and Odensholm; South-west, Hapal, formerly Viek, chief town Hapal (450), with the islands of Dagun (10,000), Worms (110), and Nuou (450); South-east, Weissenstein, formerly Yven, chief town Weissenstein (600); North-east, Wezenberg, chief town Wesenberg (400), with the islands of Eekholin, Hef, and Kranholm; besides the districts of Kunda, chief town Kunda (400), and of Laal (224 inhabitants).

ESTIENNE. [Stephens]

ESTOPPEL, an impediment or bar to a right of action, arising from a man's own act, or the act of some person through his authority. There are three kinds of estoppel.

1. By matter of record, as letters patent, pleading, &c. Thus in an action against a patentee by his assignee, the patentee is estopped from pleading that the patent is invalid.

2. By matter of writing, as by deed, &c. parties and privies are estopped from alleging any thing contrary to the deed. It is frequently laid down that an indorsement is more effectual in working an estoppel than a deed poll [Deed]; but from the statement in the book from whence this position is derived (Shep. Touch, 59) it does not appear that the fact is so, inasmuch as it is there admitted that if both parties sign and seal a deed poll, they are equally estopped as if the deed had been indented.

3. By matter in pais (in the country); e. g., transactions between the parties not evidenced by record or writing as, entry, acceptance of rent, &c. Thus after acceptance of rent a landlord cannot treat his lessee as a trespasser. The rules which govern the application of this doctrine are laid down in 1 Inst. 332 b.

In 1557, in his Law Glossary, says that this work is derived from the French estoit, and that from ester, which is to supply with necessaries, and is of the same signification as the Saxon word bole. In legal phraseology it is the liberty which the owner of an estate for life as well as free tenant for years (in the latter case any stipulation to the contrary) possesses of taking a reasonable and necessary supply of wood from the estate for the use or furniture of his house or farm, and this, according to the use to which it was applied, was either called house bole, plough bole, cart bole, or cart bale. House bole is a sufficient allowance of wood to build or repair the houses, barns, &c., which are in use, whereas cart bole is the wood employed in the making or repairing all instruments of husbandry, as carts and ploughs, farm implements, &c.; hedge bole or hay bole for repairing hedges, fences, walls, tiles, and gates, and to secure inclosures.

If a tenant takes more than is needful for tos ease purposes he may be punished for waste, as if he cuts down wood to burn when he has sufficient dead wood upon the estate; and a tenant, although he may cut down and take sufficient wood to repair pales and fences as he found them, still he may not deprive his landlord of the use of such trees.

A rector may also cut down wood for the repair of his parsonage-house or the chancel, and even for any old pews which belong to the rector; and, like other tenants for life, he is entitled to estovers for repairing the barns and outbuildings before his death.

Estrato uses the word estovers in a different sense, viz., as the sustenance, which a man committed for a felony, is to have out of his lands for goods for himself and family during his imprisonment; it also occurs in the statute 6 Eliz. c. 3, as an allowance of meat or cloth; but the more common and usual signification by which it is known to lawyers has been already stated. (Woodfall, Landl. and Tenant; Comyn.)

ESTRAY, any valuable tame animals found wandering at large within any manor or lordship, and whose owner is unknown. Having been impounded, and proclaimed in the church and the two nearest market-towns on a market-day, they become, if not claimed in a year and a day, the absolute property of the king, as lord paramount of the soil, though generally the lord of the manor or liberty is the owner in possession. Any use unappropriated to the landlord, or belonging to him sets no value, as a dog or a cat, or such as are of a wild nature, as a fox or a wolf, cannot be taken as estrays. Swans may be taken as estrays, but no other fowl. The king or the baron, or any other person, who has the absolute property in estrays, has the right to lay a mark on the estrays, by which they are to be known, and the court, so that they may be known and the king or the baron, or any other person, who has the absolute property in estrays, has the right to lay a mark on the estrays, by which they are to be known, and the court, so that they may be known and the king or the baron, or any other person, who has the absolute property in estrays, has the right to lay a mark on the estrays, by which they are to be known, and the court, so that they may be known...
Portugal. Its length from north to south is about 150 English miles, and its average breadth is about 90 miles from east to west. Its area is reckoned at about 14,800 English square miles. Two large rivers, the Tagus and the Guadiana, both coming from Castile, cross the province from east to west, which took place a barrier against the invasion of the invading divisions of the province, that of the Tagus being Northern Extremadura, called also Alcântara or Upper Extremadura, and that of the Guadiana forming the southern part, which is called Baja, or Lower Extremadura. A range of mountains, also, divides the province into Alagón and the Sierra de Cádiz, and which, under the various names of Sierra de Guadalupe (5,000 feet), Sierra Marchal, and Sierra de San Pedro crosses Extremadura in a south-west and west direction, and then joins itself to the Sierra del Portalagre, on the line of Rome, and the bay of Alcántara, running in waters which flow into the Guadiana and those which run into the Tagus. To the north the basin of the Tagus is bounded by another and still lofter ridge, the Sierra de Gredos, a continuation of the mountains of Ávila, in Old Castile, which runs westward under the names of Sierra de Francia and Sierra de Gata, along the boundaries between Extremadura and Salamanca, and afterwards entering Portugal joins the Sierra de Estrella in the neighbourhood of Alcázar and Penamácar. From this northern ridge several valleys cut their way to the Guadiana and the Tagus, which flow southwards into the Tagus. The Alagon rises in the mountains of Las Bateas, waters the fine plain of Plasencia, passes by Coria, and enters the Tagus above Alcantara. Its whole course is about 70 miles. Of the streams which flow from the mountainous centre of Extremadura, the principal one is the Salor, which rises in the Sierra de San Pedro, and enters the Tagus below Alcantara. The principal towns of the northern division of Extremadura are: Plasencia, a bishop's see, with 6,700 inhabitants, and a fine residence of the bishop; of those of the northern part of the province, Alarcón on the Tagus, with 3,300; its handsome bridge built by Trajan was partly destroyed during the Peninsular war; Valencia de Alcantara, near the frontiers of Portugal and at the foot of the Sierra de Fria, with 4,700 inhabitants; Trujillo, near the borders of Castile, the birthplace of the Pizarros, with 4,600 inhabitants; Coria, north of the Tagus and west of Plasencia, with 2,900.

The basin of the Guadiana, or southern division of Extremadura, is drained by a chain of rivers, of which the chief is the Guadiana, which, under the name of Sierra de Guadalcázar and Sierra de Monasterio, divides the waters of the Guadiana from those of the Guadquivir, running westwards along the borders of the provinces of Extremadura and Sevilla, and then entering the Tagus at Almendralejo, on the bridge of the Guadiana. This branch of the Sierra Morena is comparatively low, few if any summits reaching 2,000 feet above the sea. The banks of the Guadiana, especially below Badajoz, are low, flat, and unhealthy. The finest district of this part of Extremadura is that of Llerena, near the foot of the Sierra Morena, of Xeres, and la Serena. Badajoz is the capital of all Extremadura, and the residence of the captain general. [BADAJOZ.] The other towns of the southern division are: Merida, the ancient Emerita Augusta, with about 30,000 inhabitants; Cuéllar, and Caceres, the ancient Cáceres, restored by Philip II.; a triumphal arch, the remains of a theatre, of a naumachia, and circus, and numerous other traces of its former splendour; Xeres de los Coballeros, south of Badajoz, with 8,300 inhabitants; Alburquerque, north of Badajoz, and near the frontiers of Portugal, with 6,700 inhabitants; Oliveza, a fortified place formerly belonging to Portugal, with 2,000 inhabitants; Llerena, near the foot of the Sierra Morena, with 6,500; Zafra, an industrious place, with taneries, and manufacturers of hats, &c., 7,500 inhabitants; Medellin, on the south bank of the Guadiana, the birthplace of Cortes, with 17,000 inhabitants.

The whole population of Extremadura is vaguely reckoned at 550,000 inhabitants, divided among seven towns, 212 villages or boroughs, and 121 aldea or villages, mostly thinly inhabited. The ecclesiastical division consists of three bishoprics, namely, Badajoz, Plasencia, and Coria, and 412 parishes. There were also 170 convents previous to the late suppression. Extremadura is one of the least populous provinces of Spain; its depopulation dates from the expulsion of the Moors, and the subsequent establishment of the Moors, or administration of the flocks of migrating sheep that did not take refuge in the succeeding generations. About four millions of sheep come to graze, during winter, from the other provinces on the open spontaneous pastures of Extremadura. Other tracts are covered with underwood and wild odoriferous herbs. There are also great forests of oak, beech, chestnut, and pine trees; there are numerous herds of swine feed: the flesh of these animals forms a considerable article of commerce with other provinces of Spain. Game of every sort is plentiful. The cultivated parts produce some wheat, oats, Indian corn, flax, hemp, and the usual crops of other countries. Bees, honey and wax are also gathered. Many ruined and deserted villages are met with over the country, with traces of former cultivation and of a population which has disappeared.

The Extremenos, or inhabitants of Extremadura, are reckoned the most grave and taciturn of all the people of Spain. Living in a remote inland province, with few means of communication with the rest of the world, they have, generally speaking, no notion of the luxuries or even comforts of life, and indulge in no vice but their own to get themselves to acquire them. When they have an object in view, they are capable of great exertion and perseverance: they are frank, sincere, and honourable, and robust of body, and disposed to military service, especially in the cavalry. Some of the Basques of Navarre and the Almogavars of America were natives of Extremadura. The great number of emigrants which left this province for the New World during the sixteenth century has been considered, but with little reason, as one of the causes of the depopulation of Extremadura. The name of Extremadura is said to be derived from the Latin 'extra orto,' it being the furthest and latest conquest of Alfonso IX. over the Moors in 1228.

The high post-road from Madrid to Lisbon crosses Extremadura, and is kept in good repair. The other roads are bad, and impassable for carriages in the rainy season. The posadas or inns on the roads are among the worst in Spain; provisions are scarce, and the markets few and ill supplied. On the side of Portugal, the frontier north of the Tagus between Extremadura and Beira, is bounded by the Guadiana, an offset of the Sierra de Gata, which extends from Penamácar, a town within the Portuguese frontier, southwards to the Tagus, a few miles west of the bridge of Alcántara. A road leads from Plasencia across these hills by Zara and Caceres, to Badajoz, on the Tagus, by a high road of 212 miles. From Badajoz to the Tagus, the western boundary of Extremadura is much further advanced towards the west; beginning near Montalvao, about 33 miles west of Alcántara, it continues southwards, passing a little to the east of Castello de Vide and Alcanxar, an hour's journey from Badajoz, to the Tagus, a few miles below Badajoz. From thence, for about 30 miles southwards, the Guadiana serves as a boundary, after which an ill-defined tortuous line, of about 90 miles more, first south and then south-east, marks the limits between Extremadura and Beira, to the foot of the Sierra Morena, which forms the north boundary of Andalusia.

Extremadura has mines of copper, lead, and iron; and one of silver at Lagrosan, near Alcoro. The manufactures are few, consisting chiefly of leather and hats at Badajoz, and light manufactures of linen and coarse woollen. The land belonging to lay proprietors is estimated by Milán at 35 millions of reals. This includes silver, or little more than half a million sterling, and that belonging to the clergy both regular and secular, before the late suppression, at 21 millions and a half, or about 210,000 sterling. (Milán, Diccionario Geográfico, art. 'Extremadura'; and also Statistical Tables annexed to the art. 'España,' Ancillon; Bowles.)

ESTREMADURA, a province of Portugal, is bounded on the north by Beira, on the east partly by Beira and partly by the Atlantic Ocean, and on the west by the Atlantic Ocean. The length of the province from north to south, from the village of Lavoas, which lies on the sea-coast south of the mouth of the Mondego, to the borders of Almoeos near Melões, south of the lagoon of Setúbal, is about 140 miles, and its greatest breadth from east to west is about 85 miles. The ridge of the Estrella, which crosses part of Beira from east to
West, cuts off a branch to the south-west, which enters Estremadura nearly, and thence the north-eastern coast of the province under the various names of Serra de Lousã, Serra de Almendres, Monte Junto, and Serra de Barraqueira. The Serra de Barraqueira stretches to near Torres Vedras, and there meets at an obtuse angle the ridge which runs towards the Tagus, and forms the promontory on which Lisbon is situated. This latter ridge, which is separated from the former by a narrow but deep ravine extending from Torres Vedras towards Sobral, furnished Lord Wellington in 1810 with a valuable position of defence against the French and Royalist armies under Marshal Massena. The line of hills extends from the mouth of the Zêzere, west of Torres Vedras, to the town of Almada on the Tagus, a distance of about thirty miles. The village of Sobral lies in front of the centre of the line.

The communication of Lisbon with Estremadura chain already mentioned divides the waters which flow into the Tagus from those streams which run direct into the ocean. Among the tributaries to the Tagus, the most considerable are—1. The Zêzere, a rapid stream which has its source in the mountains of Guarda in Upper Beira, enters Estremadura near Pedrogão, and running southwards receives the Névoa from Thomar, and then enters the Tagus at Panheira below Abrantes. 2. The Azevouja, called also Rio Mayor, which rises north of the town of Rio Mayor, and runs east, then north, and at length to the east of the hill of Santarem, and enters the Tagus above Villa Franca. The streams which flow from the north-west slope of the ridge into the ocean are—1. The Lis, which rises near Almendo, flows by Batatâ, receives the Lema near Obidos, and the Tagus below Cape Sines. 2. The Alenquer, which rises south of the Lis, flows by the Baya (the two together giving the name to the town of Alcobaça), and after a short course enters the sea. 3. The Arouca, a small stream which rises in the group of Monte Junto, between Serra de Lousã and Relvão, where the first engagement between the English and the French in the Peninsular took place on the 17th of August, 1808, and then enters the lake or lagoon of Obidos which communicates with the sea. 4. Fainter south towards Torres Vedras is the Ribeira de Vinhais, a small stream by which flows the Alenquer, and a short course enters the sea south of Penedo Point. 5. The stream Zêzere rises below Sobral, flows through the ravine above mentioned between the Serra de Barraqueira and the ridge of Torres Vedras, and enters the sea at the west extremity of the lines.

That part of Estremadura which lies north-west of the central ridge and between it and the sea is mostly flat and sandy towards the coast, and either barren or covered with beds of pine. Leiria lies in a fine valley on the Lis, at the foot of a steep ridge of granite which separates the country which lies to the south-east of the ridge sloping towards the Tagus, is finer and better cultivated, especially the plains about Tomar and Santarem, which are very fertile, and abound with olive and other fruit-trees, and fine pasture-grounds. The country about Cartaxo produces much wine. But the finest part of the whole province of Estremadura, and which lies to the south of the lines of Torres Vedras towards Lisbon. A second range of hills rises behind the first, extending from Mafra and Ericeira on the sea, to near Povoa do Palhão on the Tagus, the high summit called Cabeço de Montachique standing in the centre; and south of these are the hills of Cintra, Queluz, Belas, &c., which command the city of Lisbon and the banks of the Tagus down to Fort St. Julian. Between these various ranges are delightful valleys, covered with forest, and with gardens, orchards, and vineyards, remarkably well cultivated. This pleasing exception to the generally slow and unprofitable state of agriculture over the greater part of Portugal was attributed, in the last century, and by autho- rities cited, to the value of the produce of the English residents at Lisbon, who being partial to rural life, took pains to embellish their country-houses and gardens according to the fashion of their native country, and thus inspired the Portuguese with a taste for improveinent, which has since been the abundant result, which a fine soil, a favourable site, and a genial climate afford. (Du Chatelet and Bourgeois, Voyage en Portugal.) The vineyards of Bucelas, Caravelas, and Colares, produce excellent wine. The neighbourhoods of Mafra, Barreiro, Colares, Queluz, Cascais, are just celebrated for their romantic position. A pleasing sketch of these delightful spots is given in Beckford's Recollections of Portugal, 1825.

The southernmost part of Estremadura, which lies on the left or southern bank of the Tagus, is not so fine as that on the right bank, being mostly low and flat, and unhealthy in several places. A range of hills which is a continuation of the lines above mentioned joins to the mountains of Spanish Estremadura, runs from coast to coast at some distance south of the Tagus, enters Portuguese Estremadura north of Setúbal, and terminates on the peninsula of Almada opposite to Lisbon. But the limits between Estremadura and Alentejo are not marked by this range, that the demarcation being a tortuous and capricious one, beginning from the sea north of Cape Sines, then taking a semicircular sweep to the eastward, crossing the river Sado and the range above mentioned east of the line of the river of Alcácer do Sal, and then turning south by the course of the river Cachia to the Tagus. The country included within this line, the sea and the Tagus, forms the comarca or district of Setubal which is included in the province of Estremadura. But farther to the east Estremadura again encroaches upon Alentejo, extending along the left bank of the Tagus from Saldavida up to Peral, which lies nearly opposite Abrantes and the hills called Cime de Ourem: the limits between Estremadura and Alentejo are marked on this side by the course of the rivers Sado and Zelas, the latter of which joins Tagus near the town of Sobral. The territory of Estremadura also includes the territories of Chamusca, Alenquer, and Santarém, which are included in the administrative districts of Santarem and Alenquer beyond the Tagus. According to a new territorial plan published by the Cortes of 1822, the Tagus was turned to the south, and the whole left bank considered as belonging to Alentejo. But the political convulsions which followed prevented the new plan from being put into execution.

Estremadura is divided into the following comarcas or districts—1. Lisbon, which includes the capital and its suburbs: Belem, with its splendid monastery; Bemfica, near the fine aqueduct of Aguas Livres, which carries the water to Lisbon; Campo Grande, with an important monastery of Religious of the Order of St. Francis; and the residence of the archbishop of Lisbon. The population of the comarca of Lisbon is estimated at 360,000. 2. Torres Vedras, with the town of that name, 2,000 inhabitants; and also Mafra, with 2,000, its splendid palace, church, and convent, called the Esorial of the Jesuits, and a valley, called the valley of the Peixeira, near Mafra, a small fishing harbour: and the port of Cascaes, near the entrance of the Tagus. 3. Villa Franca, with the pretty town of that name on the Tagus above Lisbon, with some modern establishments of silk, and a well-built tower of line, and a considerable cloth, which supply Lisbon with bricks. 4. Alemquer, with the town of that name, 2,000 inhabitants; and a paper manufactury; and the town of Chamusca beyond the Tagus, with 3,000. 5. Santarem; the town of that name stands on a steep hill rising above the Tagus, with seven massive convents and other extensive buildings, and an old castle, and 7,000 inhabitants. The other towns of this district are: Torres Novas, a lively place in a fine country, with about 4,000 inhabitants; Golegão on the Tagus, where one of the principal fairs of Portugal is held; Salvaterra de Magos, on the left bank of the river, with a royal villa and hunting park, which contains wild bears. 6. Tomar, containing the town of Tomar, east of Santarem, with 4,000 inhabitants, a large manufactury of spinning cotton, manufactures of cotton stuffs, etc., which are the principal revenue belonging to the military order of Christ. The other towns are: Abrantes, on the slope of a hill above the Tagus, with 3,000 inhabitants, the fine church of St. Vincent, and a bridge of boats over the Tagus. 7. Ourém, containing the town of Ourém, navigable by the ense, called the Esorial of the Caldeires, which is about 90 miles above Lisbon by the course of the river. Punhe, at the confluence of the Zêzere with the Tagus, Sardão, with 3,000 inhabitants, and Pedrogão, at the foot of the Esrella, belong also to the district of Thomar. The town of that name has 3,000 inhabitants. 8. Leiria, containing the town of the same name, with 2,000 inhabitants, with a bishop's see and a castle, on a steep rock. Near it is the village of Marinhagrande, with a glass manufactury, established by an English speculator. The other towns of this district are: Pombal, near the border.
The population of Etampes in 1832 was 8109. They manufacture soap, leather, woolen yarn, cotton counterpanes, and hosery; and trade in wool, corn, flour, and honey. There are more than forty mills of different kinds on the two brooks which water Etampes: sandstone is quarried in the neighbourhood, and much garden-stuff raised for the supply of Paris. Etampes is the capital of the arrondissement that had in 1832 a population of 41,008, and has a subordinate court of justice (tribunal de première instance), a high school, and an agricultural society. Guittard and Geoffroy de St. Hilaire were natives of this town.

Etaweh, a district in the province of Agra, bounded on the north by Furruckabad and Alighur, on the east by the kingdom of Oude, on the south by Cawnpore, and on the west by the district of Agra. The district of Etaweh forms part of the Doab, and was acquired by the English from the king of Oude by the treaty of 1801. The town of Etaweh, the antient capital, and Mimporee, the modern capital; Kanoje, Belah, and Shekoabad. The town of Etaweh stands on the east bank of the Jumna, in 26° 47' N. lat. and 78° 53' E. long., about 70 miles south-east from Agra.

The soil, productions, and climate of this district have already been described. [AGRA; DOAB.]

ETHING. [ENGRAVING.]

ETHULWulf, [Edw.] ETHAL, a substance separated from spermaceti by Chevreul. It is a solid, fusible at nearly the same point as spermaceti, and a perfect matrix of soap. It is soluble in water; but in alcohol at 150° Fahr. it is much more soluble than spermaceti. It is susceptible of union with various bases, with which it forms salts or soaps.

ETHELBALD, king of Wessex, was the eldest surviving son of Ethelwulf who succeeded to the throne of that state in 855 or 856. [ETHELWULF.]

On the death of Ethelwulf in 857 or 858, Ethelbald married his young stepmother, Judith of France; but the vehement remonstrances of Swinth, bishop of Winchester, prevailed upon him to marry Judith afterwards became the wife of Baldwin, count of Flanders, and the ancestress of Matilda, the wife of William the Conqueror, and, through her, of all the succeeding kings of England. The chroniclers speak in very favourable terms of Ethelbald's administration, although he had greatly distinguished himself in the wars with the Danes in his father's time, his own reign is not marked by any military events. He died in 860, and was succeeded by his next brother, Ethelbert.

ETHELBERT, or, as the name is written by Bede,
ADILBERT, was the fourth king of Kent in lineal descent from Hengist, through Erke or Assa, Otha or Otta, and Ermen, whom he succeeded while yet a child in the year 550. As the representative of the first leader of the Anglo-Saxons and the founder of the oldest kingdom of the Heptarchy, Ethelbert, as soon as he attained manhood, declared his determination of breathing peace with Caedwalla, king of Wessex, who claimed that supreme dignity as the grandson of Cerdic. [ENGLAND.] He invaded Wessex in 561: but the war was speedily ended by his defeat in a great battle fought at Wallingford, near Wimborne, upon Sutton Hoo. This was the first instance of any of the states of the Heptarchy drawing the sword against another. Ethelbert, however, according to Bede, came to be acknowledged as Bretwald over the year 589, after the decline of the fortunes of Caedwalla, who was deposed about the time of the battles of the laund days after. Later Ethelbert retained the supremacy during all the remainder of his reign, though it would seem that his title never was acknowledged by the kings of Northumbria.

The most memorable event in the reign of Ethelbert was his conversion to Christianity and the establishment of that religion in his dominions by the ministration of St. Augustine. [Augustine, St.] Ethelbert professed himself a Christian, and was baptized on the feast of Pentecost A.D. 597. The Christian worship, however, must have been few and sporadic for many years after his death, when he married to a Christian wife, Bertha, the daughter of Charibert, king of Paris, in the year 570, and she and her attendants had ever since practised their own religion under the guidance of Lindaul, a bishop who had accompanied her from France. After the current of Ethelbert's kingdom had been sent to the west, the diffusion of his new faith. He founded the bishopric of Rochester about the year 601 in his own dominions, in addition to the archbishopric of Canterbury, the establishment of which is dated from the arrival of Palgrave in 597. Bede also attributed the foundation, about the same time with that of Rochester, of the bishopric of London, in the state of Essex, which was at this time governed in subordination to Kent by Sebert, Sebert, Sibert, Saebyfrith, or Siha, a nephew of Ethelbert, who was the founder of London Church, which was dedicated, like the others that have since been built on the same site, to St. Paul, was erected at the joint expense of Ethelbert and Sebert. The conversion of the king and people of Essex had previously been effected through the influence of the king of Kent. It was also through his daughter EadBERCH, who married Edwin, king of Northumbria, that Christianity was introduced into that state. [Eowyn.]

Ethelbert deserves especial remembrance in English history. He is the earliest person whom we find among the Anglo-Saxons with whom we are acquainted, who, after the passage of our written laws, the collection of Dooms, as Bede calls them, 'which he established with the consent of his witan in the days of St. Augustine.' They are written in Saxon, or English, as it is termed by Bede, although all the fragments expressly mention the names of the comites in their codes; and they are the earliest laws that exist in any barbarous or modern tongue. There is no reason however to suppose that the regulations which they established were in general new. They relate, to quote the words of Seckle, to the 'ancient law.' In p. 144. From the antiquity of the common system, and the pecuniary fines payable for various transgressions, the offences against the church being first enumerated. These were of new introduction; but every other mutat was known before; and it is probable that the principal benefit of his religion was to foster opposition to the punishment to the crime than could be obtained according to the older customs.' The collection consists altogether of eighty-nine enactments or clauses; at least as it has come down to modern times. But the only copy of it which we possess is that contained in the volume called 'The. Tucts Offences,' which was compiled by Emphius, bishop of Rochester, in the early part of the twelfth century; and 'it is difficult to believe,' as Sir F. Palgrave has observed, 'that the text of an Anglo-Norman manuscript of the twelfth century is an accurate copy of that of the Anglo-Saxon of the reign of Ethelbert. The language has evidently been modernized and corrupted by successive transcriptions. Some passages are quite unintelligible. Neither is there any proof whatever of the integrity of the text. It cannot be asserted with any degree of confidence that we have the whole of the law. Destitute of any stat
and unheard-of ferocity. At a village called Hoxton, in Norfolk, they seized Edmund, the East Anglian king, and put him to death: he sustained the tortures they inflicted upon him with such constancy that he was afterwards revered as a martyr, and the 20th November, the day on which he suffered, has become a day of humiliation and woe for the Danes. His death made the Danes masters of East Anglia, over which they placed Godred, one of their chiefs, as king. They next resolved to invade Wessex, the only state which they had not either conquered or rendered powerless. They entered Berkshire, under the command of Halfdan and Furseg, and took the town of Reading without encountering his resistance; but they were soon after attacked by Earl Eadwulf at the neighbouring village of Inglefield, and driven from their ground with the loss of Sidner, one of their captains, and Harthacnut, one of their Upon arrival at Reading by King Ethelred and his brother Alfred; but on this occasion the Saxons were repulsed with great loss, the brave Earl Eadwulf being among the slain. The battle of Reading, however, was followed in four days more by another more important encounter at a place which the old writers call Asseadum, or the Ash-tree Hill, and which has been supposed by some to be Ashbury in the west, by others Asston in the east, of Berkshire. The Danes were attacked with great impetuosity and valour by Ashby, the son of Ceddric, the king of Mercia, who, after a struggle of some length, completely defeated the Danish attack and put to flight. It is said that the English chased them for the whole of the night and next day over the country till they reached the town of Reading, in which they again met the Danes, who were defeated beyond the Ash-tree Hill. They again met the two kings of Wessex at Basing, in the north of Hampshire, and this time the English were worsted. A similar result attended the next battle, fought about two months after, at a place called Merton, in the south parts of the county of Berkshire, and Merton in Oxfordshire, Merotts in Wilts, and Mortons in Berkshire. In this engagement, which must have taken place early in 871, Ethelred received a wound, of which he died soon after Easter, leaving the now almost shadowy inhabitants of the counties in which he had reigned to be governed by his elder brother Alfred.

E Thelred II, surnamed the Unready, king of the Anglo-Saxons, was the youngest son of King Edgar, by his second wife, the infamous Eadgifu. On the murder by Ethelweard of his elder brother, Edward the Martyr, in 975, he was reluctantly acknowledged as king by the Witan, in the absence of any other individual having pretensions to the crown, even Dunstan, who had steadfastly opposed the party of the Empress. But there was more than a spark of feuille d'ern in the accession of her son. He was removed by Dunstan, at Kingston upon the Thames, on the 14th of April, being at this time only a boy of ten years old. The reign of Ethelred the Unready is on the whole the less remarkable of the two. They were soon after driven from Mercia and Northumbria, and their feeble and distracted government that arose out of his minority and the circumstances of his accession immediately drew more upon England the attention of the northern principalities, who had now remitted their attacks for a time under the pretence of the service of silver. The next year, by extraordinary efforts, a numerous fleet was built, and assembled at Sandwich, but a dispute arising among the captains, one of them desecrated with twenty vessels, and turned pirate, and nearly all the remainder driven by a storm into the Channel. About this time all the other forus of public calamity combined to affliet the nation. The king was an object of general hatred or contempt; the nobility were divided into hostile factions; and famines and contagious diseases vied with the swords of the invaders in destroying the miserable people. In 1009 a new Danish force arrived, under a leader named Thurkill, who for the three following years spread devastation throughout the whole part of the country that had hitherto afforded an asylum from the foreigners, the fens and marshes. After he had laid waste the wood of Hyde, near the city of Canterbury, Thurkill was bought off in 1012 by a payment of 40,000 pounds of silver, and he and his followers agreed, on being allowed to settle in the country, to become the subjects of the English king. But the next year Sweyn himself again made his appearance, now avowing his determination not to depart till he had effected the conquest of the country. Entering the Humber, he received the submission both of the Northumbrians and of the parts of Lincoln that were in like manner chiefly inhabited by a small English king, and by the king of Northumbria. Sweyn then proceeded to the country to London, putting all the males to the sword as he advanced; but the capital, which was defended by Ethelred and Thurkill, resisting his assault, he turned to the west, and, compelling the nobles to make their submission to him wherever he passed, he proceeded to Bath, and there caused himself to be proclaimed king of England. Soon after this London submitted to his authority; and in
The middle of January, 1014, Ethelred flew to the court of Richard, duke of Normandy, whose sister Emma he had married some years before. He had previously sent their daughter Ethelwyn, which the Norman court accordingly, after entering into a solemn agreement with the Witan, that he would be a good lord to them, and all that they wished to have amended, and that all things should be forgiven which had been done or said against him, they on their part promised that they would all turn to him without fraud, and would never again permit the Danes to have dominion in England. Ethelred declared it prudent to take flight before the national momentum of the moment; and it is said that another general massacre of the clergy was left behind him in the city, after the restoration of a national government. But Canute returned the following year with a powerful fleet: The was immediately joined by Thurrehil, who, till now, had remained faithful to his English allegiance; other chiefs followed Thurrehil’s example, and a great part of the country appears to have again speedily submitted to the Danes. Ethelred was confined to his bed by illness when Canute arrived, and he died in London on the 23rd of April, 1016, at the moment when the enemy was preparing to attack him. Ethelred was succeeded on the throne, according to Ironside, his eldest son by a lady named Eadleda, who is said to have borne him six sons and four daughters, but to whom it is doubtful if he was ever married. Edward, one of his two sons by Emma of Normandy, whom he married in 1010, was acclaimed as the throne. [EWARD INGELSTED, AND EDWARD THE CONQUEROR.]

**ETHELWULF**

was the son of Ecgbert the Great, whom he succeeded in the throne of Wessex and the supremacy over the other states of the Heptarchy, in 836. The previous events between Ecgbert and his brothers, the conquest and annexed to his dominions, and also that of Surrey, which had hitherto been included in Wessex, were at the same time formed into a separate but subordinate kingdom, and put under the government of Athelstane, which is the name given to the land that had been the state of his eldest son, others a younger brother of Ethelwulf. There is no other authority than that of Malmesbury (whose account is indispensably incorrect in several particulars and improbable in others) for the story that Ethelwulf was a monk at the time of his father’s death. His early education is recorded to have been conducted first by Helstan, bishop of Winchester, and afterwards by Swinith, whom, on coming to the throne, he advanced to the same see; and he also had served with distinction in the field in the lifetime of his father, who, besides a great talent for policy retained to the last in high esteem, his chief counsellor the sable Alstan, bishop of St. Albans, who had been in great favour with Ecgbert. What has been preserved of the history of the first fourteen or fifteen years of the reign of Ethelwulf consists almost exclusively of the accounts of contests that he had made in 834 or 835, with the consent of the Witan, in favour of the church, and which was wont to be considered as the original foundation of the right of the clergy to the tithes. The grant is recited by Inghulfus, Malmesbury, and Matthew of Westminster, who mentions that he had it confirmed by the king, and Edward, his son, Ethelfrid, Ethelred, and Alfred. One of the legislative acts of the reign of Ethelwulf has been made known to us, which was the act that the taxes which had been settled on the nunneries of the Anglo-Saxon lands were generally liable, or that it was an additional gift of land, not of tithes, either of the king’s private dominions, or of some other which is not explained. Palgrave contends that it was not a mere tax of one shilling of the tenth part of the land by heca and bounds, to be held free from all secular services; yet he admits that the interpretation which construes the grant into an enfranchisement of all the lands which the church then possessed, is “not altogether void of probability.”

**ETHERIDGE,** sometimes written EITHERIDGE, SIR GEORGE, born about 1636, was a distinguished wit and dramatic writer of the reign of Charles II. He is the usual routine of a gentleman’s education at that time, studied law at an inn of court and travelled. In 1664 he made his first public appearance as author of the comedy 'The Ploughman's Husband,' which was followed in 1668, and 'The Man of Mode,' or 'Sir Foolish Flatterer,' in 1676. All these were received with much favour by the
public, but 'Sir Fopling Flutter' has been the most esteemed. They placed him, with Buckingham, Rochester, Sedley, &c., in the first rank of the wits of the day. Ease and brilliancy of dialogue are their characteristic excellence; but they have an ingrained taint of licentiousness running through all. Their conception as well as the language, which has long excluded them from the stage, the characters are supposed (which is the author's best excuse) to be but highly coloured copies of the fine gentlemen and ladies of the day, we shall marvel that the name and character of genius should ever have been sullied by such a total want of truth as the above; Sir George Etherege's verses are not numerous, and consist of occasional pieces, lampoons, songs, and short satirical poems, some of which are of a very licentious character. Their style may be guessed at from his appellations of easy Etherege and gentle George. Rochester, or at least one of the Poets, gives high praise to our author, in saying that

Of all men that writ,
There's none more dear, more taste, judgment, and wit.

Fancy and wit may be allowed him: the taste and judgment artists Rochester's own. Etherege's private life may be guessed from his writings: play injured his fortune, debauchery his constitution. He repaired the former by marrying a rich widow, whose price was a title; and to win her he purchased his knighthood. He was in James II.'s household as a secretary, and was dismissed by the minister to Ratisbon, where, by some accounts, he died from a fall down stairs after a convivial entertainment; but this appears uncertain. The time of his death seems to have been about the Revolution.


**Ethereum**, a theoretical carburetted hydrogen, consisting of 4 equivalents of carbon = 24, and 5 equivalents of hydrogen = 5: its equivalent is therefore 29. Among the various names it is sometimes called the constitution of ethers, that which suppose its to contain ethereum (as it is termed by Dr. Kane, and ethule by Berzelius), as a base combined with oxygen, is perhaps to be preferred to all others. It is indeed true that etherium has never been obtained in a pure state; but allowing its existence, etherium may be regarded as an oxide of ethereum, alcohol a hydrated oxide of ethereum or a hydrate of ether, and sulphovinic acid may be viewed either as a hydrated sulphate of oxide of ethereum, or a hydrated sulphate of ether.

**Etherea**, Lamark's name for a genus of Conchiflers, placed by many authors among the Chamisides, but separated by Deshayes and others from that family for the reasons assigned under the article Chamaiza. Lamark assigns to this genus the Unio. Lobes of the mantle disunited throughout their length, and, consequently, without either tubes or syphons. Below the foot, the branchial of the right side unite themselves to those of the left side in the median line, and leave below them a rather large canal, in which are important vessels. The branchial leaflets are unequal, strongly striated and festooned on their free border. The mouth is rather large, and furnished on each side with a pair of palps like those of the Unio. Finally, (as Deshayes observes, it is a singularity how an animal that lives attached to foreign substances,) it is provided with a very large foot, which may be compared in regard of its form and position with that of Unio.

Skull adherent, thick, nacreous, very irregular, inequilateral; umbones short, thick, indistinct; hinge toothless, irregular, undulated, callous; ligament longitudinal, tortuous, external, penetrating pointlessly into the interior of the shell; muscular impressions oval, irregular, one superior and posterior, the other inferior and anterior; periostracum moderate in thickness and small.

**Obes.**—M. Deshayes observes that on examining the shells of this genus, in which the ligament is not ruptured, it appears that the ligament is not entirely internal or sub-internal, like that of the ostreids, but that it has completely attached them from the same side. The branchial leaflets are unequal, strongly striated and festooned on their free border. The mouth is rather large, and furnished on each side with a pair of palps like those of the Unio. Finally, (as Deshayes observes, it is a singularity how an animal that lives attached to foreign substances,) it is provided with a very large foot, which may be compared in regard of its form and position with that of Unio.

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Opinion of M. Deshayes, cannot be retained. With regard to the conchiferous hinge, the hinge adverted to by M. de Rœurussac, M. Deshayes states that it consists of an individual which M. de Rœurussac had in his hands some small fractures resulting, as it appeared to M. Deshayes, from this cause, namely, that the shell having been taken up from the sea, and then being afterwards separated by attacking the ligament with a sharp instrument, Geographical Distribution, Habits, &c.—Lamark considered the genus Etheria to be marine, and accounted for its having escaped the notice of zoologists because it was attached to rocks and shells in the sea. Mr. G. B. Sowerby, after noticing the locality to which M. Lamark refers, remarks that two circumstances observable in the Etheria (E. semilunata), figured in his plate, would have induced him to suspect that this was a fresh-water species. It is, in fact, one of estuaries at the mouths of rivers; 1st, its having an epidote that he had seen on the unna those parts least exposed to the action of the water, the greater part especially of the upper valve being eroded in a very irregular manner; and 2ndly, its being partly covered with the remains of those of the vesicular bodies, supposed to be the eggs of some molluscan worm. M. de Rœurussac, it may be seen on fresh-water shells. M. Cailliaud was the first to make known the fact that the genus is an inhabitant of the fresh waters, and M. de Rœurussac (Mémoires de la Société d'Histoire Naturelle) published in 1841 a paper on the subject from M. Cailliaud's materials, in which the former made a revision of the species. M. Deshayes, in his treatise on the genus (Encyclopédie Méthodique), states that individuals of this same species adhere by the one or the other valve to the rocks and shells, and that they hang on the oysters or the Chama. That Etheria might be attached indirectly by either valve there is no reason to doubt after the assertion of M. Deshayes; but Mr. Broderip (Zool. Trans., vol. i.) observes that the same species of Etheria was obtained by M. de Rœurussac from the left valve. (Chamaeca, vol. vi, p. 470.) M. Rang, during a voyage to Sonegal, made some interesting observations on Etheria which live 200 leagues from the mouth of the river in the Senegal, and, together with M. Cailliaud, states that he has taken them on the coast of Africa. (Mémoires du Muséum d'Histoire Naturelle) full of interest, in which the animal was described for the first time. The rivers of Africa and Madagascar appear to have afforded the specimens (which are still rather scarce in cabinet) hitherto collected. M. de Rœurussac, in his memoirs, gives the following information from M. Cailliaud.

'We first meet with Etheria,' says that zealous traveller, 'after passing the first estuary; and they do not appear to last below; they become very abundant in the province of Bilih, beyond the first estuary; and are found in all the rivers that collect them on the banks of the river, to ornament their tombs with them, and they say that they come from the more elevated parts of the Nile, from Saida, where they are still seen; M. Cailliaud has obtained them from the most distant country into which he penetrated from the river of the Senegal. In Sennar, those inhabitants informed M. Cailliaud, that during the summer season, when the river was low, they took them with the animal; but notwithstanding all his endeavours, M. Cailliaud could not obtain any living specimens, the river being then always too high. They are said to be very common in the Jabbousi, a river which runs into the Blue River, and in all appearance the numerous confluent streams of this great arm of the Nile produce them also. The coast of Equatoria, and especially Ethiopia is so great, that it is astonishing that Bruce and Burckhardt should not have mentioned them. (Zool. Journ., vol. i.) Lamark recorded four species of Etheria, which he divided into two contractions, each containing two species. The first of these consists of species which have an oblong callosity in the base of the shell; the second, of those which have no encrusted callosity at the base of the shell. These four species M. de Rœurussac (with justice in the opinion of M. Deshayes) reduces to two; so that the three species which M. de Rœurussac describes were, by Lamark, would each, in that case, consist but of one species, viz., the first of Etheria elliptica, and the second of Etheria semilunata. M. Deshayes remarks that Lamark saw but a very small number of individuals, and not being aware of their extreme variation, established species from the form of the shell; and it is certain, he adds, that if we were to follow the same indication at the present day, we would reduce the number of species. (Vol. X.—H.)
might establish a species for each individual. He notices M. Rang's judicious observation, that in the same species there are individuals armed with spines, and others devoid of those appendages, and that the shades of this character are so gradual that it is impossible to regard it as of smallest importance. In following out this principle, M. Rang considers Etheria tubifera of Sowerby and Etheria Callinoua of Férussac as identical, and E. Carteroni of Michelin to be the same as E. plumbea of Férussac. It is to the last-named species that M. Deshayes thinks that the genus Mulleria should be referred.

Etheria, or, as some write it, Etheria, has not yet been discovered in a fossil state. It should be remembered that Rafinesque uses the term for a genus of Maenourous Cretaceous belonging to the Paleonotidae.

*Etherina*, a peculiar carbarbated hydrogen, which has also been regarded as the basis of ether. It is supposed to consist of 4 equivalents of hydrogen and carbon.

**Etherous sulphuric acid—Ethionic Acid.** This acid is prepared by passing the vapour of anhydrous sulphuric acid slowly into absolute alcohol kept cold; by their mutual action an oleaginous fluid is formed, without the evolution of any gaseous matter. This fluid is to be mixed with water and saturated with barytes, by which a portion of sulphate is separated, and etherous sulphate of barytes is obtained by evaporation in vacuo. The acid in this state is stated to consist of—

| Two equiv. of sulphuric acid | 80 |
| One equiv. of etherine | 28 |
| One equiv. of water | 9 |

Equiv. of etherous sulphuric or ethionic acid 117

It may be considered either as a hydrated bisulphate of etherine, or as an anhydrous bisulphate of ether, or of oxide of ethereum.

**Ethics** is the science which relates to our mental affections, not simply as phenomena, but as they are virtuous or vicious, right or wrong. (Dr. Thomas Brown's Lectures, p. 486, Edinb., 1830.) The term is derived from the Greek ἔθις, which, in signification, is equivalent with the Latin mos, more, whence the adjective moralis, and the English word moral. Aristotle, in the second book of his Ethics, addressed to his son Nicomachus, says that moral science received the name of ethics from the word ἔθειος, 'habit, use, or custom,' (ἡθική, ἔθειος ἔθειος, or ἔθειος ἔθειος), since it is from habitual experience, and the routine of customary conduct that moral dispositions and principles are gradually formed and changed. Cicero, in his work on moral ends (De finibus, 1. i. and ii.) briefly defines virtues and vices in a similar manner, as 'the arts vivendi,' or the 'arts bene vivendi,' that is, the art of living wisely. The scholastic treatises on ethics divide the practical part of the science into three departments: *Éthique* (éthique), which shows by appropriate precepts what is the duty of a good man; *contemplative* (contemplatif), which deals with the good father of a family; and *politique* (politique), which exhibits the duty of a good citizen, and of a good magistrate.

**Morals.** *Éthicus* or *Ethicus* is conjectured to have lived about the fourth century of our era, and is the reputed author of a Cosmography or short description of the world, being an enumeration of the seas, islands, provinces, mountains, rivers, and towns of the then known world, with a short account of the sources and course of the principal rivers. In speaking of the Barbarian's course through Rango, it mentions the gate of St. Peter, that of St. Paul, and the Via Portuensis, or of 'the martyr St. Felix.' He also speaks of Rome as the mistress of the world, of the games held by the Romans, of the profectus urbis, &c. These circumstances may serve to fix the time of the compilation of the work towards the end of the fourth century, when Rome had become completely Christian, but yet before Alaric's invasion. *Ethicus* and his Cosmography are mentioned by several writers of the following ages, and among others by the Fathers of the fourth century, who lived in the early part of the seventh century. Rabanus Maurus (de inventione linguarum), a writer of the ninth century, calls *Ethicus* 'a Scythian,' and Flodoardus, a writer of the following century, calls him 'Isier' fioiu *Istrin.' (Vossius, de Histor. Lovani, b. iii.) At the beginning of his Cosmography *Ethicus* states that Julius Caesar, during his consulate with M. Antony, by virtue of a senatorus consultum, ordered a survey of the Roman world to be taken, and that the work was entrusted to three geometers, Zenobius for the eastern part, Polydesius for the south, and Theodorus for the north, who completed their work under Augustus. This survey was probably the source from which the Antinian Itinerary was derived, which Itinerary in its present shape has also been attributed by some to *Ethicus*. *Aenior, Itineraire des.* The Cosmography in most publications is followed by another and somewhat fuller description of the various parts and provinces of the world, apparently of the same period, entitled *Alis totius Orbis Descriptior,* and generally attributed to *Ethicus* also, though there is a doubt concerning his authorship. The latter work is also found almost literally in Orosius, forming the second chapter of his history. It has been suggested that Orosius may have copied it from *Ethicus*, and the text of Orosius has certainly the appearance of a copy, as he has shortened beginning or introductory matter, and also left out the conclusion, by which the author of the description, as we have it separately, promises to give a continuation of his work, or an abler description of the towns. &c., beginning from Rome, which he styles 'Caput Mundi et dominae Senatus.' (Simler's edition of *Ethicus*, Basel, 1752.) This last sentence promises a fuller account, which the author did not fulfil or which has been lost, would not have fitted Orosius's historical narrative, and therefore he left it out. But it is also worthy of remark that in two MSS. of Orosius in the national library at Paris, No. 4575 and 4982, the second chapter ends with these words, which are not found in the other MSS. and printed editions of Orosius: 'Perennis breviter ut potius provinciarum Orbis Universi, quas Solinis ita descripta.' This would seem to attribute the work to Solinus.

To the two Cosmographies attributed to *Ethicus* is added, in some editions, another extract, which is styled 'Julii Honorii Oratoris Excerpta quae ad Cosmographiam pertinent.' It is in its plan similar to the first Cosmography of *Ethicus*, only perhaps a dryer and more introductory, and they have been compared together with Pomponius Mela, by Gronovius, Leyden, 1633.

**Ethiopi** (Aethiopia) was the name given by the ancient geographers to the countries south of Egypt. In a more general and vague sense they called Ethiopians all the inhabitants of the south part of Africa, from the Nile to the Red Sea to the Atlantic. Herodotus (iv. 197) speaks of the Ethiopians as inhabiting the whole of South Libya (Libya is with
him synonymous with our Africa), as distinguished from the Libyans who inhabited the Mediterranean coast and the interior adjoining it. He also speaks of the Ethiopian Tribesmen (vi. 183) whom he includes among the Wagad, or People of the Ganges, and mentions some of their strange stories of them; but these particular Ethiopians must be considered included under the general name. Strabo places the Hesperian Ethiopians near the Atlantic Sea, and south of the Pharusii and Negri, who were themselves south of the general sea. These Ethiopians correspond with the inhabitants of the countries south of the great desert, of which the ancients knew very little. Herodotus (vii. 70) also speaks of Asian Ethiopians, who formed part of the great army of Xerxes; but their locality is not easily determined. The historian however observes that the Asiatic Ethiopians were black, like those of Libya, but differed from them in language, and had straight hair; whereas those of Libya had very curly hair, by which term some modern writers have perhaps too hastily concluded that the woolly hair of the negro is intended. But Early Ethiopians, properly called Ethiopia above Egypt (Herod., vii. 69), and also Ethiopia Orientalis, was a distinct and better-defined country. It included those regions which we now call by the name of Nubia and Semnian, and perhaps part of Abyssinia. However, these names were not employed by Herodotus, however, it should be observed, clearly distinguishes the Ethiopians immediately south of Egypt from those whom he calls long-lived Ethiopians (ti. 17), whom he places on the shores of the southern sea. But what country or countries, or what general and habited by these long-lived Ethiopians, it seems impossible to say.

Meroe, which lay above the confluence of the Atbaras (Tocazzc) and the Nile, was the ancient capital of Ethiopia, in the limited ambit of the kingdom of Ethiopia, a kingdom in which we shall now consider the term. The Togrodgian border upon Ethiopia to the east, extending along the coast of the Red Sea. To the west of Ethiopia were the Biermeyes, a barbarian tribe, of whom wonderful stories were told as having no beards, but eyes as large as a month full. Herodotus (vii. 36) also says, that the Ethiopians were reduced to a fixed social state, and was held traditionally to have been the parent of Egyptian civilization and religion. Its government was monarchical, but the monarch was subordinate to the priests, and the latter not merely religious, but absolutely more powerful than that of Egypt. Diodorus (iii. 6) says, in Ethiopia, when the priests think proper, they send a message to the king with orders for him to die, the gods having so commanded their pleasure, which no mortal should dispute.

It has been long a subject of discussion among the inquirers, whether the arts of Meroe were descended from Egypt to Ethiopia, or ascended from Ethiopia into Egypt. Here, as in many other contested historical points, much discrimination is required. It would appear, from tradition, that the priests, very important in religious ceremonies, were brought down from Meroe into Egypt. Herodotus (ti. 29) says, at Meroe, the great city of the Ethiopians, the people worship only Zeus and Dionysus (Ammon and Osiris), and them they greatly reverence. They have an oracle of Zeus, and they make their expeditions whenever and wherever the Deity, by his oracular answers, orders them. This shows that the priests of Meroe sent colonies into other countries, and Egypt was naturally one of the first lands to which they would resort. The worship of Ammon (the Libyan Zeus) was established in the country of the Hesperian Ethiopians, by the festival of the Argaei, which was carried by them down the Nile, was a simpler and purer form of worship than the absurd assemblage of duties which afterwards gained ground in Egypt. The procession of the Holy Ship, with the shrine of Ammon (the Libyan Zeus), which took place annually at Thebes, and which was carried across the Nile to the Libyan side and brought back after a few days, was in commemoration of the first advent of the god from Ethiopia by the river. This ceremony is sculptured on several Egyptian monuments, and is connected with the ancient temple of Carne. Homer probably alludes to it when he speaks of Jupiter's visit to the Ethiopians and his twelve days' absence. It appears also that the worship of Isis descended the Nile from the farthest regions of Ethiopia. Diodorus (ti. 3) says, the people of the town of Ammon (this was the chief town of Ethiopia in the time of Dirodorus) used to send ambassadors with presents from Ethiopia into Egypt, which received also from the parent state the practice of deifying kings, together with hieroglyphical writing, the usage of embalming, the whole sacred ritual, and the forms of their sculpture. (Diodorus, vii. 1.) A temple of Ammon was dedicated in the Egyptian Ethiopia; but this was probably a partial incursion, for Herodotus (ii) says that Ethiopia was never conquered by any foreign power. We hear nothing of the intercourse between Ethiopia and Egypt for many centuries afterwards. The two and three centuries later, says Salukos, Ethiopia estab-ished Egypt in obedience to an oracle, a fact which shows that the power of the Ethiopian hierarchy still continued in full vigour. Still we find other Ethiopian kings ruling successively over at least part of Egypt; among others, Tir-
hakham, mentioned in the Scripture as having fought against Sennacherib. The condemnation on the book of Kings (2 Kings 19:37) would have considered Tahhabah to be an Arab chieftain; an error disproved, as it is considered, by the existence of his name on one of the buildings of Thebes. This period of renewed intercourse between Egypt and Ethiopia, under circumstances highly favourable for the diffusion of the arts, was probably the period when the refined arts of Egypt were introduced into Ethiopia, and it was probably then that the splendid structures of Mount Barkal were executed; a supposition which would be confirmed, if it be true that the name of Tahhabah is found in the hieroglyphical cartouches in the Temple of Rhames, built according to Champollion's system.

Again, under the Ptolemies there is evidence to show that Greco-Egyptian colonies found their way into the regions of the Upper Nile, and along the shores of the Red Sea, and even as far as Axum and Adulis, Ethiopia [Ancient Ethiopia]; the commerce or adventurers probably spread the Egyptian arts as improved by the Greeks in Ethiopia.

All these vicissitudes may account for the various styles of building and sculpture found along the banks of the Upper Nile. The monuments of Assour and el Mosourah are probably older than those of Naga, and these much older than those of Barkal, which are probably anterior to the temple of Sobel. We know from a passage of Dio the Emperor of that the Ptolemies came to reign in Egypt a great century after the Ptolemies came to reign there. Sooner or later, the second Ptolemy the Ethiopians had a king Ergamenes who had a knowledge of Greek manners and philosophy. Being weary of the yoke of the hierarchy, he went with a band of soldiers to the inaccessible place of (Barkal) which contained the temple of the god Barkal, an Ethiopian personage, and a priestess. (Heeren's work on Egypt, and the Egyptian Antiquities in the British Museum in the Library of Entertaining Knowledge.)

Of the manners of the Ethiopians we know little, except what we can gather from their monuments and the scanty records we have of their religion and institutions, as above stated. Their sacred language appears to have been the same as that of the Egyptian priests. From some sculptures at Barkal, it would seem that human sacrifices were offered in the worship of Barkal. A peculiarity of the other Ethiopian institutions is, that their women sometimes went to battle, and were not excluded from the throne. Strabo (Casub., p. 820) speaks of the Ethiopian warrior queen named Candace. (See also Acts of the Apostles, viii. 27.) On the propyla of one of the temples of Naga, besides the hero or king, is a female figure likewise of regal dignity, with a large knife in each hand, going to cut off the heads of a number of captives; the vulture is hovering over her head. The figures of both kings and queens in the sculptures of the Barkal show the costumes and ornaments of the priests. (The same as in the case of the priests.)

In the 2nd Ptolemaic period, the magnificent buildings of the temple of Naga were constructed after a manner similar to that of the temple of Sobel, and we find that they were built by Diocletian. It is not improbable that the archbishop of the city of Naga was a bishop of Sobel, and that the art and methods of the latter were imitated by the former. The so-called "Barkal, the name of the place, is derived from the word "Barkal," which is the name of a district in the province of Upper Egypt. The name is also found in the name of the town of Barkal, which was the capital of the province of Naga, and which was the seat of the archbishop of the province.

The origin of the name 'Ethiopia' is uncertain. Sall says that Tippuwan was the favourite term by which the Abyssinians designate themselves; but this was probably introduced among the Abyssinians by the half Greeks of the kingdom of Axum. The word in Greek has the appearance of being significant, and is sometimes interpreted 'dark-coloured,' but like many other Greek names of nations, it is probably a native Asiatic or African term corrupted into the semblance of a genuine Greek word.
EXCLUSIVELY BIBLICAL AND ECCLESIASTICAL. THE ETHIOPIANS possess a complete translation of the Old and New Testament, made by an unknown author from the Alexandrian text of the Greek version, probably not anterior to the fourteenth century; besides an interpretive writing, peculiar to themselves, called the book of Henoch, which is supposed by De Sacy to have been written during the reign of Herod the Great, and to be the book quoted in the Epistle of St. Jude (v. 14). (See The Book of Enoch the Prophet, &c., translated by Richard Lawrence, Oxford, 2d edit. 1833.) There exists moreover a translation of the Didascalia, together with 56 canonès and 81 constitutiones or rules of the early Christian church, consulted by the Ethiopians as apostolical; besides a collection of the decrees of the councils, extracts from the writings of the early fathers, liturgies, martyrology, and histories of saints. HYMNS are not uncommon: they are not written in any regular metre, but sometimes show a rude sort of rhythm, and often every three or five lines end in the same consonant, which constitutes a kind of rhyme. The profane literature of the Ethiopians comprises several chronicles, which appear to be of considerable interest, but have not yet been made generally accessible. Among these the Chronicle of Axum deserves to be particularly noticed, a copy of which was brought to Europe by Bruce, and is now preserved at Chelsea College, in the possession of the family of that traveller, along with numerous other oriental manuscripts left by him.

The Ethiopians have no grammars nor a dictionary, proper to themselves, of their ancient language, and only possess vocabularies, in which words are clasped according to the subjects to which they refer. In Europe the Ethiopian language was almost unknown till Job Ludolf (or Leutholf), assisted by a native of the country, made himself master of it. The first grammar which was published was published at London, in 1661, in 40; a much improved and enlarged edition of both works appeared at Frankfurt in 1782. Since the publication of these works, little progress has been made in our knowledge of the Ethiopian language, excepted by some of our readers as may wish for further information on the subject.

ETHIOPIE, a term now obsolete, but formerly used by the old chemists to denote various dark-coloured metallic preparations; as ETHIOPIAN MARIATE, which is black oxide of iron; ETHIOPIAN MINERALS, which is a black mixture of mercury and sulphur, &c.

ETHEL. [ETEREHUM.]

ETHUSA, a genus of brachyurous crustaceans (Tribe Dorippinae), established by M. Roux at the expense of the genus Stenocypris, by M. Milne Edwards observes that this genus is easily distinguished from Dorippus by the conformation of the apertures leading to the respiratory cavity, which here present the normal disposition.

The Carapace is quadrilateral, but rather longer than it is wide, and very much flattened; front long, orbits directed forwards, very incomplete; eyes carried on a rather long and very projecting peduncles; they pass beyond the external angle of the carapace, and are not retractile. The internal antennae are bent back (replique) forwards, in fossettes placed under the front; the external antennae are rather long; their first joint is cylindrical, and separates the antennary fossette from the orbit; the third is longer than the second. The buccal frame (cadre buccal) is triangular, and their first joint is very short. The hands of some species are inserted upon a broad,贸易 funded the feet, much shorter, and leave naked the anterior portion of the jaw-feet of the first pair, which complete forwards the channel of the respiratory cavity; the third joint of the external jaw feet is shorter than the second, nearly quadrilateral, more robust and articulated with the following joint by the middle of its anterior border. The Pterygostomiæ regions are nearly quadrilateral, and are not prolonged behind the base of the external jaw-foot and of the first thoracic leg, which is the most posterior. The Placophoræ is oval. The anterior feet are short and slender in both sexes; in bending they form a double elbow, as in Isanola. The succeeding feet are long, especially those of the third pair; those of the fourth pair are, on the contrary, extremely short, with always the weaving of the second; longer than the fourth pair, are inserted above and in front of them, and, like them, are terminated by a very short, hooked, and subcheliferous tarsus. The antennæ in the male have seven distinct joints; in the female it has only five; the two first rings are directed backwards and on the same plane with the carapace.

Example, ETHUSA MASCARONE (Roux), Cancer MASCARONE, Herbst.

ETIENNE. [STEPHENV.

ETIENNE, ST., a town in France, in the department of Loire. It is on the left or south-west bank of the Funnel, a tributary of the Loire, 255 miles south-south-east of Paris in a straight line, or 317 miles by the road through Fontainebleau, Nemours, Montargis, Briare, Nevers, Moulins, Roanne, and Montbrison; or 318 miles by the road through Melun, Sens, Joigny, Auxerre, Avallon, Autun, Châlons sur Saône, Mâcon, and Lyon; from which last town it is 27 ½ miles long.

St. Etienne is of comparatively modern origin. It grew up upon the troubled reign of Charles VII. The townspeople obtained permission to inclose their town with walls: this was granted a.d. 1444, but the space inclosed is said to be only a tenth of that which St. Etienne now covers. The town was then called Funanis; it takes its modern name from St. Etienne, a bishop of Lyon, at the beginning of the sixteenth century. The particulars which follow are chiefly from the 'Itinéraire Descriptif' of Vassy de Villiers, Paris, a.d. 1816, corrected by Mr. Pemberton, a.d. 1832.

The site of the town may be distinguished at a distance by a dense cloud of coal-smoke. It is situated in the midst of a coal-field, and coal is the only fuel employed in the various manufactories and workshops. The town is, especially the outskirts, very dirty; in summer the streets are dusty, in winter muddy, and when it rains the black dust, washed by the rain from the roofs, converts the streams that fall from the gutters into little better than ink. The houses, both in the centre and outskirts of the town, are built of brick and earthenware. The town is, with the exception of those parts of the outskirts which are occupied by a large and handsome thoroughfare irregularly-shaped open space or 'place,' in the middle of which is a fountain adorned with a small obelisk. From this 'place' opens a new street running above half a mile, a straight line in the direction of Roanne, and terminating in the only promenade which the town possesses: the road continues in the same line for two or three miles to the village of St. Priest, where the ruins of a Gothic castle on a hill terminate the view. There are hotels, a theatre, and a town-hall; the last building is handsome.

The population of St. Etienne, in 1832, was 33,064; including the neighbourhood it may be calculated at more than 60,000. Its increase of late years has been very great. The town on its prosperity is the largest in the coal district, which not only furnishes the inhabitants of the neighbourhood with a considerable article of export (for much coal is sent to Paris), but enables the townspeople to carry on their various manufactories. The coal is abundant and of good quality, the colliers belonging rather to the neighbourhood than to the town itself. The inhabitants of the town are employed either in the manufacture of firearms (which are made here to a greater extent than in any town of France), knives, locks, and other hardware, or at some less remunerative occupation. Whole families devote themselves to each kind of manufacture: the women work in the same factory with the men, and sometimes share with them the most laborious parts of their task. There were, a very few years since, a royal
manufactory of fire-arms, forty manufactories of arms of all kinds, ten of cutlery, forty-five of hardwoods, and one hundred and fifty of ribands and velvet. The waters of the Fumud, which is but a small brook, are well calculated for tempering iron and steel, and also for dyeing. A railroad, more than 34 miles long, connects St. Etienne with Lyon: this work has been carried on in spite of great difficulties; hard rocks have been cut through and hollows filled up; there is a tunnel through a mountain near St. Etienne. As many as 1800 carriages are said to pass daily between the towns: stone is quarried near St. Etienne.

St. Etienne has a high school, a school for miners, a deaf and dumb school, a course of instruction in geometry and mechanics, applied to the arts, a society of agriculture and trade, and a public library.

It is the capital of an arrondissement, containing in 1832 a population of 149,189: the arrondissement is small, but there are in it several towns which are engaged in various branches of trade, similar to those carried on at St. Etienne; Chambron and Firminy, where nails and ribands are made; St. Chamond, where ribands are manufactured; and Rive de Gier, where coal is dug and iron cast. A late return assigned to the arrondissement 47,750 workmen of all kinds; of whom 3000 were colliers, 2400 engaged in iron and steel works, 2800 in manufacturing cutlery and hardwoods, 2800 in making fire-arms or weapons for war or the sports of the field, 3000 in making nails, 1800 in glass works, 2900 in preparing silk, and 27,500 in the manufacture of ribands. The value of the raw materials on which these workmen were employed is estimated at 26,855,000 francs, or about 1,500,000 l.; and it was considered that this value was doubled by the various processes of manufacture.

Before the Revolution, St. Etienne had several religious houses.

ETI'SUS, a genus of brachyurous crustaceans (Cancériens of Milne Edwards).

Carapace less oval and wide than in most of the Arched Cancériens (Cancériens arqués). The front is large, lamelar, and divided on the mesial line by a fissure, as in the Xanthi; but the two large and truncated lobes which form the principal part are separated by a deep notch of the anterior and superior angle of the orbit, which is rounded and projecting; the latero-anterior borders of the carapace are strongly toothed. The Internal Antennae are bent back nearly longitudinally, and the basal joint of the External Antennae, which is very large, unites with the front, and presents on the external side a prolongation which fills the hiatus of the internal orbital angle; finally, the movable stem of these antennae, which is very short, is inserted completely out of this hiatus, below the front and nearer to the antennary fossa than to the orbit. The external jar-antenn present nothing remarkable; the feet of the first pair are rather large, and the chelae, which are much enlarged and rounded at the end, are deeply hollowed into a spoon-shape.

Milne Edwards, who gives the above description, divides this small group, which he considers as forming the passage between the Xanthi and Platyacarini, into the two following sections.

a. Carapace scarcely knobbed above.

Example, Etius dentatus. Length three or four inches; colour reddish. Locality, the Indian Archipaco.

b. Carapace covered with knobs, separated by deep furrows. Example, Etius angulatus; length about an inch and a half; colour whitish. Locality, Australasia.
Campania, and the number of towns which they built or colonized there, is a matter of much doubt. (Niebuhr, vol. 1. On the Options and Ausonians, and, for a conflicting opinion, Voltaire's De la Mer.)

The permanent power of the Etruscans lay in Etruria Proper, or Etruria Media as it has also been called, which corresponds in great measure to the present Tuscany, with the addition of that part of the papal state which lies on the right bank of the Arno. Mention is made in antiquity of the four Etruscan cities—Cortona, Rusclto, Fesulsa, Populonium—which the country we refer to Tuscany. They had twelve principal cities or states, all situated between the Arno and the Tiber, for the country between the Arno and the Maera was annexed at a later period by conquest over the Ligurians. Each state formed an independant community, the towns being bound together by a sort of loose confederacy: at times very loose, for we find repeatedly one state going to war without the assistance or interference of the rest. Of these twelve towns, eight are mentioned by Livy (xxvi. 43) on the occasion of his enumerating the allies who volunteered to assist in explaining Scipio's armament against Carthage: they are Cere, Tarquinii, Populonium, Volterra, Arretium, Perusa, Clusium, and Russellae. To these must be added Veii and Volaterrae, which had been previously conquered by the Romans. The two remaining may be selected from among Cortona, Costa, Capena, and Fesule. It must be observed that long before that time some of the old cities of Etruria had dwindled away, such as Vetulonia, which had disappeared before the historical age of Rome, and of which some remains are found in the Palatine hill, in Rome, which was originally a colony from Volaterrae, probably took the place of Vetulonia among the twelve.

Antiquities.—We may here point out those towns in which Etruscan antiquities are still found, and thus convey some idea of what we know of the state of the arts among those people:

1. Arretium [Arezzo] was destroyed by Sulla, and no traces of Etruscan construction now exist. The remains of the amphitheatre are of the Roman period, when the town was restored by Mecenas. But there are numerous Etruscan inscriptions, vases, coins, and other remains in the Museo Bacci at Arezzo, and a quantity of the red embossed pottery, "Aretina vasae," for which Arezzo was renowned of old, and of which enormous heaps of fragments have been found in the meadows near it. The town was enlarged, delicately formed, and may be seen in the plates to Inghirami's work: Monumenti Etrusci o di Etrusco Nome. Some of the moulds have also been found. 2. Perusia [Perugia] is said by Catu, quoted by Servius, x. 201, to have been the metropolis they chose to found before the Etruscan time. It has no remains of Etruscan structures, except the sepulchral building called the Torre di San Maffei, about a mile outside of the walls, with an arched vault of large polished stones, bearing an Etruscan inscription, said to be the "sepulchrum vel de inscriptionibus," and the gate, vulgarly called Arco di Augusto, which however is believed to be of Etruscan construction. (Orani, Dissertatio sopra l'Etrusco di Perugia, 1867.) A rich collection of Etruscan antiquities however is found in the Gabinetto Archeologico, with about 80 inscriptions, one of which consists of 45 lines, the fragments of an Etruscan quadriga, described by Inghirami (vol. vii., p. 360), and some handsome painted vases, bronzes, &c. (Vermiglio, Storia dei Bronzi Etrusi trostati nell'Agro Perugino, 4to, 1859.)

2. Volterra, in the middle of Tuscany, is the original circuit of its Etruscan walls, though repaired in several places. (Pianta Topografica di Cortona in Micali's Atlas annexed to his Storia dei Popoli Italiani.) The walls are built of enormous polygonal stones, well fitted together, without cement. There are other remains of Etruscan construction, among others the substructure of the palace Lapisvei. An Etruscan tomb, called by the natives Grotta di Pitagona, is seen in one of the suburbs of the town. (Cortona.)

Other hypogeae have been discovered in the country round, from which the bronze Horse in the Vatican Museum, but they belong mostly to the Roman period. (Repotti, Dizionario Geografico Storico della Toscana, 1835.) The Accademia Etrusca, established in 1726, whose president is called Lucumo, has published 10 vols. etc. of Memoirs. 4. Fesule, now the city of Massa Fiorentina, was one of the twelve metropolitan ones. Its massive walls are its only Etruscan structure now existing; the theatre and other remains are of the Roman time, probably of the date of Sulla's colony. (See plan and views of Fiesole, plates 2, 11, and 12 of Micali's work, and also Bandini, Lettere Fiorentane and Itinerario di una Giornata d'Istruzione a Fiesole, 1814.) 5. Clusium, or Cosa, now in ancient Gaetulacum, 6. Rome, built on a hill above the valley of the Chiana, was one of the most distinguished Etruscan cities. Of its old walls there remains nothing but a fragment built of large polygonal stones behind the choir of the cathedral. There are several museums, containing a considerable collection of antiquities, urns, vases of old Etruscan manufacture, single coloured, and later ones, or Campano Etruscan as they have been styled, with figures of one or two colours different from the ground, gold ornaments, engraved terracotta, &c., in the house of D. Paolo di Giacomo, Sorri, and Castelli. The last mentioned is the richest, and a description of it by Valerianii, with above 200 plates, has been published under the title of Museo Etrusco Chiassi, 2 vols. 4to, 1833. 6. Volterra, Volturna, is a hilly island between twenty miles north-west of Sieua, is about four miles in circumference: many parts of its walls as well as one of the gates, called Porta dell' Areco, are of old Etruscan construction, being built of large rectangular stones generally six feet in length, though some are much larger, set in horizontal layers without cement. In some places two of them alone, set side by side, form the thickness of the wall. Maffei considered the walls of Volterra as the best calculated to give a true impression of former Etruscan greatness. In the thermas which were discovered by Guarnacci, (De monumentis Etrusci, 1833.) was now given an architectural description and its remains restored by numerous sepulchral monuments, statues, basalt, reliefs, both in alabaster and sandstone, vases, paterae, &c. On these monuments of the ancient Etruscans we may, in some measure, read the history of their civilization and social economy; for a knowledge of the ancient state of these monuments of that country, in default of written records. Guarnacci published a Museum Antiquorum Monumentorum Etruscorum e Volterrana Hypogeis Erutorum, cum Observationibus, A. F. Gori, fol., 1744; see also Giorgi, Dissertazioni Accademica sopra un Monumento Etrusco, ritrovato negli Antichi Suburbari di Volterra, l'anno 1746, etc., Fronzoo, 1752. But one of the most extensive and satisfactory works on Etruscan antiquities is the recent one of Inghirami already mentioned, Monumenti Etruschi o di Etrusco Nome, which was published in six volumes, 4to, in 1805, and 1 vol. index. Inghirami's collections represent chiefly objects found in the territory of Volterra, in the numerous hypogoe discovered there; and they are intended to illustrate the state of the three fine arts among the Etruscans, for which there are monuments in six orders, the houses, sepulchral and cinerary vases in alabaster or sandstone, with sculptures. 7. Patera, which Inghirami calls 'spechi mistici,' or mystical mirrors, with specimens of Etruscan linear drawing. 8. Bronzes of cast or chiselled workmanship. IV. Architecture, specimens of Etruscan sepulchral hypogeis or sepulchral monuments, some of which are from Tarquinii, and other parts of ancient Etruria. V. Vases, some such as those of Arezzo, all of one colour, either red or bluish black, with embossed figures, others with figures of different colour from the ground. VI. A collection of monuments, most of them not Etruscan, but which serve to compare with, and form a contrast to, those of Etruscan art. Inghirami has not included in his collection the inscriptions, canaeus, gems, coins, lamps, &c., which may be found in other works; but on this point, and in the drawings of this Etrusca, 3 vols., svo., Rome, 1789, a work much more valuable for the quantity and variety of monuments which it illustrates, than for its hypothetical and now generally rejected system of Etruscan grammar and etymology.

Among the other Etruscan towns which have now nearly disappeared, and of which nothing but ruins remain, may be mentioned—

1. Casa o Cossa, called Ausoniana in the middle ages, on a hilly coast of the lake of Orcetello, the walls of which are in tolerably good preservation, with several towers, and the temple of the goddess of love. 2. Piombino, now Porti Burato, on the coast north of Piombino. The only remains are part of the walls, which are standing. Micali has given a plan of Populonia. 3. Roselle, the ruins of which are a hill called Monte di Grosseto, about two miles from Barberino near the left bank of the Ombrone; the circuit of its walls, which consist of large rectangular blocks, is about two miles. Micali has given a plan of this also. 4. Saturnia, called also Aurinia, on the left bank of the river Albegna, near the coast.
of the mountain of Santa Fiora, and on the borders of the Papal States, shows some fragments of its walls built of polygonal stones. 5. Tarquinii, the site of which is on the left bank of the Marte, near Corneto, exhibits no remains above ground, but the great number of hypogee, forming a vast necropolis in the neighbourhood, give an idea of its former importance. They are excavated in the rock, which is of volcanic formation; some of the chambers are square, fifty feet on each side, and about six feet high; the ceiling has been谤 strikingly preserved by square pillars of the rock itself; the sides are adorned with stuccoes and paintings, some of them allegorical of the state of the soul after death, others representing funeral processions, games, banquets, &c. A number of urns, vases, &c., have been found in these hypogee within these sepulchres, which may be said almost to rival, for the interest they excite, those discovered in Egypt by Belzoni. The first Tarquinian hypogee were discovered about 1790, by Cardinal Garampi, and represented by them are given in Aginimius Lyke, vol. iv, plates 10 and 11. But the greatest discoveries have been made of late years, engravings of which are given in Iugheram's and Miciani's works.

Further inland, about ten miles north of Tarquinii, near the village of Canino, Lucien Bonaparte has discovered a vast quantity of similar remains of Etruscan art, of which he has formed a valuable museum at Canino, and of which he has published a description. (Museum Etrusque de Lucien Bonapart, 1806, Contenu, p. 15). These discoveries have revived the question of the original Etruscan civilization, and those who derive it from the Greeks. Probably the question might be solved by admitting various epochs of Etruscan art, one anterior and another posterior to the intercourse which existed between the Etruscans and the Greeks about the second or third century of Rome. Even in the monuments of Tarquinii and Canino two styles are discernible. Other proprietors in the same district have made further discoveries. One, in the river Fescu, in the district of Montalto, extensive remains seem to mark the site of the Etruscan Vulcii, which was conquered by the Romans at the same time as Velvinii, about the year 473 of Rome. Here also a vast necropolis has been found, with a quantity of urns and other antiquities. At the hamlet of la Circumcella, a group of buildings of large rectangular stones, consisting of cells and two towers, one square and the other circular, above thirty feet high, have been found buried in an artificial mound or hawor. At the top of the tower there are niches in two stories, and griffins. Miciani, plate 62, gives the plan and views of these monuments, which are one of the most curious Etruscan discoveries hitherto made. In 1832 only one third of the mound had been dug up, so that further structures may be found.

The site of Care or Agulla lay near the village of Ceretere or Cerretti, between Rome and Civitavecchia. Its port, Fyruss, was near where the coast-tower of Santa Seora is now. No remains of either have been discovered. The ancient Velvinii was called Sutri, a name which appears to have been derived from their towers, and their lands were given to military colonists. The proscriptio of Octavianus after the battle of Poenius, completed the desolation of Etruria. The language itself gradually became obliterated by the conquest of Rome, but certain original words and some structures, as maintained by Lezii and others, has no foundation.

With regard to the political and social institutions of the Etruscans, we cannot do better than refer to Miciani's work (vol. ii, chapters 21 to 24), in which he gives a fair and accurate account of the Etruscan nation, their religion and morality, and their domestic manners. We ought to bear in mind that all the accounts we have of the Etruscans were written after their subjugation to Rome, and that a nation which had a political existence of eight or ten centuries must have undergone considerable changes in its manners and institutions. Each of the twelve principal cities of Etruria ruled over the population of its respective district, which was perhaps originally a conquered race. In the city itself were two orders, the hereditary families of priests and the commonalty. The religious and the political and religious power were in the hands of the former, who elected from their own body the annual magistrate called Lucumano. We know that the Lucumono at times contrived, especially in times of war, to protract his term of office, and sometimes to retain it for life; but all attempts to make him hereditary appear to have failed. The patrician and hierarchal order appears to have maintained to the last its sway among the Etruscans, the arts of divination, of which it was in exclusive possession, being a powerful instrument in its hands, compelling the populace to adhere to their religion and rites, for repressing all attempts of the commonalty. Accordingly we hear of no struggles of the kind in Etruria, as at Rome; but we hear of revolts of slaves against their masters, as in the case of Velvinii, for the Etruscans were innumerable slaves. Their masters, when they conquered, such as the Umbri, appears to have been mild: they did not destroy their towns, but surrounded them with walls, or built new ones; they taught them agriculture and other arts, they instructed them in religion.
and they are acknowledged to have been the custodians of a great part of Italy. Rome derived its earlier civilization from Etruria. The art of fortifying towns with walls and towers is attributed to them. They wrought the iron which they drew from the island of Elba, they cast bronze, and the description of the art of filling up marshes by diverting into them the course of muddy streams, which is still practised with great success in Tuscany under the name of 'colmate.' The invention of the terrini, or stones fixing the limits of property, is attributed to them, as well as the first use of the paternal authority, of testamentary will, of cannibals or marriages, were all fixed by law and consecrated by religious rites.

Their laws concerning debts appear to have been more humane than those of Rome, if we are to trust to a passage of Heracleides in which he speaks of the Tyrrhenians.

The Etruscans were fond of good living and of sumptuous banquetos, and they are called glutinous, fat, and corpulent, by the Roman satirists. Virgil (xi. 733) accuses them of keeping hogs as well as cattle, for the sake of these banquets, and that the women were kept well provided with them for the sake of the sacrifices to the gods. Their women seem to have had no great reputation for chastity (Plautus, Cistell. 2. 3. 20, and Horace, iii. Ode x. 11); yet we find the female sex in higher honour among them than among most nations of antiquity. The women required the bread and made the wine of the household, conseuated, that is, by their sagacity and perseverance, by their temples by their monuments. Their funerals were pompous, and accompanied by athletic games, but the combats of gladiators appear to have been of a late introduction, and it is believed that they originated in Campania, and from there spread over the rest of Italy about the 5th century B.C. Rome.

From some sculptures found on their monuments it would appear as if human sacrifices were at one time in practice among them, unless these representations be symbolical, as some suppose The mythology of the Etruscans is a mystery, and not well understood. They were believed in two principles, a good and an evil one, each having its respective agents or genii, and their paintings and sculptures are often representative of the perpetual struggle between the two. Twelve gods, six male and six female, at the head of which was Jupiter, formed the upper hierarchy; other inferior divinities presided over the various elements and phenomena of this earth, as well as over the occupations and domestic comforts of man. Cicero speaks very favourably of Etruscan theology, saying that they refer to nothing without a name. These supposed laws and regulations were stupefied for the prosperity and security of the state. For further particulars on these subjects, see Micali, ch. 22 and 23, Bossi, Storia d’Italia, lib. i. chap. 6, and Müller, Die Etrusker; Dempster, De Etrusco-Latino, and Müller, Italian Antiquities, and his Dictionary of the Etruscan Language.

The text of these Etruscan writers is translated and annotated by Cayla, in the Appendix of his History of the Romans, and in the Appendix to his History of the Etruscans.

ETRUSCAN ARCHITECTURE. We have no remains of Etruscan temples or other buildings, but we can form some idea of their style from their hypogei or sepulchral monuments, and also from some of their cinerary urns which represent a temple. (Micali, plate 72.) But the monuments which have escaped the ravages of time and the attacks of at least are those discovered at Castel d’Asso, the Axyz of Cicero (Pro Cicerone, 7), five miles south-west of Viterbo, where the rock forming one side of the valley facing the old castle is sculptured all along for more than a mile in the shape of so many fronts or façades of sepulchral monuments, the vaults themselves being excavated underneath. Similar sculptures on the rock are found at Norchia, about 15 miles south-west of Viterbo. (See Inghirami’s plates.) These monuments, which represent a primitive style of Egyptian or Oriental architecture, can be compared with the Egyptian style in its ruder and simpler form. Plate 62 of Micali represents a monument between Monte Romano and Corneto, with projecting architrave and lateral pillars. Vitruvius, although he lived in an age when Etruscan art had undergone considerable alteration, characterizes their buildings as 'barbaric, humiles, latre,' low, wide, with heavy top ornaments. And this seems to be in keeping with the character of the people, grave, and more fond of internal comfort than of external show. What is now called the Tuscan or Tuscanico order appears to have been a sort of rude Doric, which they probably adopted from the Greeks. (Civ. Arch. III. vii.)

Vitruvius (iv. 7) gives a description of such a style when he says they appear to have been neither large nor splendid: the ornament, bronzes, and plastic figures appear to have been more elaborate than the structures themselves. In the time of Vitruvius the houses of the wealthy Etruscans had external porches or vestibula, in which the crowd of servants and clients remained in waiting. The Atrium is also supposed by some to be of Etruscan invention. (Atrum.)

If not the inventors of the arch, the Etruscans were certainly acquainted with it at a very early period: it is found in their sepulchral structures, in their gardens, and they used it in constructing the Roman closeace. Another example of similar construction has been discovered near Tarquinii. Their skill in fortifying towns with walls and towers and ditches, and leaving an open space around called Pomerium, is attested by the Roman writers, and by the inscription of the remains of their walls. The use of large polygonal stones in the construction of walls was common to other Italian peoples as well as the Etruscans and primitive Greeks, and the name of Pelasgic, which has been given to them, is not improbable. There cannot be any particular class of these walls or the walls of any particular locality from other walls of the same kind. If by this term Pelasgic it is meant to assert that all such walls are really of Pelasgic origin, this is more than can be proved by the facts. In any case, it is certain that the Etruscans appear to have used rectangular stones, ranged in horizontal layers, and uniformly without any cement. For more complete information of what is known of Etruscan architecture, we must refer to Micali, ch. xxv. Inghirami’s De Fatt, and Ortigli, Dei Sacrali Edifici dell’ Etruria Media, also quoted by Inghirami.

ETRUSCIANS. (ETRURIA.)

ETSCH. (ETRURIA.)

ETYMOLÓGICUM MAGNUM (πό ηδο κρυφόω), an important vocabulary of the Greek language, of which the author is unknown. Some suppose it was written by a grammarian of the name of Magnus. The idea that it was compiled by Marcus Musurus, the first editor, or the Calliari, is disproved by the fact that the etymology is referred to by Eustathius. Syburg considers it as old as the tenth century: much older it certainly was not; for Theoetius, a writer of the ninth century, is quoted in it. The derivations in this work, like most of those which preceded it, are based on no principle, and though in some instances accidentally right, they are generally full of the wildest absurdities, as one might expect from the author being confined to mere guess-work. It is valuable however for containing a great many traditions relative to the names of the common words, and it often enables the scholar to correct the errors of the corrupt but inestimable lexicon of Heychins. The edition of Syburg (1594) is very useful, and has an admirable index: the edition of the Etymologicum Magnum, by Schiöfer, Lips., 1816, 4to, is a reprint of Syburg’s edition. The edition by Sturz, Lips., 1818, 4to, intitled Etymologicum Graecum Lingua Gudianum, &c., is founded on the Codex Gudianus, which is more complete than that on which the edition of Musurus and the others already enumerated are founded.

EU, a town in France, in the department of Seine Inférieure, on the south-west bank of the little river Bresle, near its mouth. Eu is 91 miles in a direct line N.N.W. of Paris. In the middle ages Eu became a strong and flourishing place: but on the threat of a descent by the English it was burnt, in 1475, by order of Louis XI, and has never recovered the blow: Dieppe and other neighbouring places profited by its downfall. Only the buildings that were not overlooked escaped the general destruction. The massive ruins of the walls and towers yet remain.

Eu has several churches: the finest, that of Notre Dame, is large and of beautiful Gothic architecture. A crypt contains the monuments of the counts of Eu; but the old ones were much damaged in the Revolution. A small church adjoining the High School, formerly the Jesuits’ College, contains the monument of the duke of Guise, murdered at St. Cloud.
Bios in 1358. There are two chateaux. One of these, built by a daughter of the duke of Pentadhras, afterwards duchess of Orléans, only half remains, the rest having been destroyed in the Revolution. The situation of the chateau is charming; the park has an avenue of fine beech trees. The two isles is (15 s. 9. la). The market-place is good. La Chasse-trée d'En is a suburb of En, on the opposite bank of the Breil. Tréport, at the mouth of the river, is the port of En: it has a church singularly situated on the extreme verge of a bight and almost perpendicular cliff, and a projecting doorway of handsome Gothic architecture.

The population of En in 1832 was 5356, that of Tréport 2647, total 8003; the population of the respective communes was 3343 and 2267, together 5610. The population of these two municipalities is independent. The manufactures of En are lensoil, soap, boxes, and other ironmongery, leather, cotton yarn, glass, salt-bath, linen and lace. En serves as a mart for the corn of the department of Somme, which is imported into that of Seine Inférieure. There is a school of military instruction, which was established by the King of the French when duke of Orléans. There is a tribunal de commerce, or court for the decision of mercantile disputes.

EUBEA (or Eu) is a name called Negropont, is an island of the Saronic Gulf, lying along the coasts of Attica, Bostra, from which it is separated by the Euphrates a very narrow channel, over which bridge has been thrown, connecting the island with the main-land. It is 90 miles in length in a north-west direction, and 30 miles in extreme breadth; but, between Aliveri Bay and Port Petria, it is scarcely 4 miles wide. The only towns are Egropoli and Karyota: the former situated where the island approaches nearest to the main, and the latter at the southern extremity of the island, at the head of a bay and the same name. The island generally is elevated, and contains among its mountains some of the highest in this part of Europe. Mount Delphi rises on the eastern shore to the height of 2366 feet above the sea, and its summit is seared ever free from trees, and, from Karyota, the southern extremity, is 4748 feet high; Mount Khandhili, 4200 feet; Mount Tedelbourn 3100 feet, are both on the western shore of Mounts Delphi. The general formation of these mountains is grey limestone, with much clay slate. It appears from the map constructed from Captain Capellando's recent surveys, that the small peninsula to the north-west, which terminates in Cape Lathada, is mountainous, and contains only one elevation, Mount Lathada, which rises to the height of 2837 feet above the sea. A little south of the point on which this headland joins the island, and on the west coast opposite to Bostra, is Mount Theostrathus, with some hot springs near its base. From Telethrus the mountains spread out north-east to Cape Amou, the most north-eastern point of the island, and extend from the northern part of the island, and containing several elevations above 2000 feet. Along the northern coast of the island, opposite to Telethrus, and stretching at the base of this mountain group, is the fertile and extensive plain of Oros, the ancient Histoumis. South of Telethrus there is high land, with some interruptions, along the west coast as far as Cape Polikata: with these limits is Mount Khandhili, near the coast, and another mountain 584 feet high. Between Cape Polikata and Egropoli, and extending several miles inland, is the fertile plain of Egropoli, which extends far back to the north and north-east by the high mountains which extend to the eastern coast. The eastern part of this mountain mass is Delphi, already mentioned, and it contains several other elevations which are between 4000 and 5000 feet. Between the mountains which we have described as occupying the north part of the island and the mass of which Delphi is the centre, is one small plain of Mandhoudi on the east coast of the island. South of the narrow channel on which Egropoli is situated there is a tract of low land along the Bay of Vathia, backed by the range of hills which extends towards the south-east, which appears to be separated by a depression from the group of mountains which form part of the south-east boundary of the plain of Egropoli. Further south and near the west coast there is also the plain of Aliveri. The rest of the island south of Aliveri, along the west coast, and the whole of the eastern coast from the plain of Mandhoudi, appears to be mountainous. The southern extremity of the island is filled by the mass of Mount Elia (4745 feet), which presents to the Archipelago an iron-bound and dangerous coast.

To the southward the plains are generally cultivated with corn and olives, but those to the northward, called the Plains of Oros, are more particularly devoted to the vine, their soil being of a very fine sort, giving a most abundant and copious yield of the grapes. Cotton is also planted more to the northward.

On the shores of the Bay of Oros are some ruins on an eminence, apparently only a military post; a few huts now surround its base, but about two miles in the interior is a well-preserved enclosure wall, the trenches of which are still visible. The island is not populous: it is conjectured to contain between 60,000 and 70,000 inhabitants, nearly all Greeks. The villages are few, and, as is the case everywhere in the Archipelago, built at some distance from the beach, generally on a elevation difficult of access. The excavation has been taken an account of the numerous depredations of the pirates, who were accustomed to land, sack a village, and embark before morning, so that unless the place were tolerably large and populous, there was no safety for life or property.

The passage between Thesei and Eubora, called the Tekiri Channel, from the town of that name at the eastern entrance to the Gulf of Volo, is about 4 miles in average width: the narrowest part, which is towards the western extreme, is not quite 14 miles wide. The sea is neither regular, but deep and decreasing gradually, drop to about 50 fathoms at the entrance to 30 towards the western end of the Negropont, off which lie some small rocky islands called Lathada Islands. Passing these islands, and turning up to the south-west, towards the north end of the island, the sea is narrow. There is a safe and commodious harbor, called Port Gliastra (formerly Port Kalos). There are two villages on its shores, Gliastra to the westward, and Elogos to the eastward, and these latter are some ancient remains and beautifully sculptured fragments of white marble.

At Cape Thessala the eastern point of the bay, there are hot springs (famously mentioned) of the same kind as, but more abundant than, those of Thermopylae; but the water issuing from them is not much, and the coals or cuprous stones are small, while the springs from which is visible for a considerable distance. Between this point and Egropoli there are only three villages, Orossos, Gliastra and Polikata; all small; but at each of them there are Venetian remains.

In the southern part of the channel there are many islands along the Eubora shore, which offer good anchorage, more especially among the Petalid Islands, which abound in rats, but possess only one spring of fresh water. From Egropoli to Karyota there are only two villages, Aliveri and Steni: the bay called respectively from the two. The bed of this part of the channel is level, but compared with the northern part it is shallow; the general depth is from 35 to 40 fathoms.

The eastern side of Eubora is a continuation of rocky coast, with only a small bay, descending precipitously to the shore with few interruptions of level ground, and this, as already mentioned, towards the northern part of the island. In the bay between Cape Doro and Oeotia, it is an unbroken line of precipitous shore, in which it is scarcely possible to find a safe place to land either from west or east. The Dardanelles current, preserving the course communicated to it by the direction of that strait, sets strong to the south-west into this bay, and renders it a most dangerous coast: no vessel ever encamped here can escape destruction. The current being deflected to the southwards sweeps round Cape Doro, frequently at the rate of three miles an hour
Port Patros is the only refuge which this coast offers, and so little has hitherto been known of this shore that even this tether has only recently been discovered. The village of Kouna, in the bay of that name, is populous, and being celebrated for its wine, the turks have built the small calisques, which however are always obliged to be hauled up on the beach for safety. Along the whole extent of this coast, which is upwards of 100 miles, there are only five or six villages near the shore.

The small number of Turks resident in Euboa left the island on its being surrendered for the purpose of forming an integral part of the Greek kingdom, of which it will not be the least valuable portion. The mountains are said to contain copper, and the marble quarries near Karystos have long been famous. (Strabo, p. 446.) The soil, favoured by the diversities of climate which such a variety of elevation affords, is capable of yielding the productions of tropical as well as of more northern regions, and of supporting an infinitely larger population than now occupies the land. The island abounds in sheep of an excellent breed; but bullocks are scarce, and bred principally for agricultural purposes. In the mountains are abundance of wild boar and deer, and the plains are overrun with hares and rabbits. Among the trees are the olive, oak, fir, chestnut, walnut, mulberry, and oriental plane. In the whole island there is not a stream deserving the name of a river into which the smallest boat could enter, and the inhabitants generally supply themselves with water from wells.

On the summit of Mount Elias (the Ochoe of Strabo) are the remains of a circular wall, consisting of rude unshaped blocks of limestone, and columns of the same material.

The town of Egripus, the antient Chalcis, the chief town in the island, is in 39° 26' N. lat., and 23° 37' E. Long. It is described by Strabo as consisting of 5,000 houses, built on a height of 50 feet, from the coast of Eubea by a narrow channel of only forty yards. It is a walled town, and further defended, where the walls are not washed by the Euripus, by a deep and wide dry ditch. The walls are turreted, slight, and built with mud: the outer port-covering the second of Mark leave no doubt of their Venetian origin. The area enclosed is about 800 yards in length by about 500 in width, which was formerly inhabited exclusively by the Turks; the streets are very narrow, but the houses capacious. The town has several gates constructed with great intricacy; that leading over the Euripus is particularly tortured, and well defended; the drawbridges have been replaced by frail fixed bridges of logs, to the great peril of passengers.

The most defensible is the fort Karababa, on the main, which stands on an eminence about 130 feet high, commencing its rise immediately from the bridge; this may be deemed the citadel of the place, as it overlooks and commands the town. It is a very misshapen structure, of an oblong form, about 220 yards long, and 150 broad. The walls are in some places so low, that an active man might vault on them; they are similar to and coeval with the walls of the town.

Outside the town to the north is a suburb appropriated to trade, and inhabited (when the writer of this article visited the place) by the Greeks and Jews. It consists of one main street about 300 yards in length, from which minor streets branch off. The houses are very small, and the shops are chiefly coffee-houses, or contain general stores and wine. A small bazaar is established in this suburb. There is no commerce except in supplies of fruit and vegetables, principally from Volo, distant about ninety miles to the north, which is all carried on in small boats. The surrounding country is flat and rich, but poorly cultivated. A subsoil of stiff clay offers materials for brick-making and potteries, which are already commenced on a small scale. The market is well supplied, especially with fish; beef is difficult to be procured, but mutton very plentiful; water is scarce, and procured chiefly from wells.

There are facilities for building vessels of large size, as the shore goes off suddenly into deep water; but the inhabitants have advanced no farther yet than the repairs, clumsily executed, of their small boats, which are built generally at some of the Greek islands. The forests on Mount Delphi, and of fir and oak (the latter of an inferior quality) would supply wood, which might with facility be brought to the town.

Immediately opposite Egripus the land rises suddenly to hills of considerable height, beyond which lie the plains of Thebes, which town is distant about 4 hours, or 12 miles.

The breadth of the Euripus is diminished by a rock in midchannel, on which a fort is built, dividing it into two channels: that towards the main, though rather the broader, is only practicable for small boats, as there is not more than three feet water at any time. Between the rock and the walls of Egripus is a distance of 33 feet, and the least depth at the highest water is 7 feet. It is here that the extraordinary tides take place for which the Euripus was formerly so noted: at times the water runs as much as eight miles an hour, with a fall under the bridge of about 1 1/2 feet: but what is most singular, is the fact that vessels lying 150 yards from the bridge are not in the least affected by this rapid. It remains but a short time in a quiescent state, changing its direction in a few minutes, and almost immediately resuming its velocity, which is generally from four to five miles an hour either way, its greatest rapidity being however always to the southward. To this constant and enduring observation, in which the above phenomena were noted, afforded no sufficient data for reducing them to any regularity.

The port to the northward of the bridge, though not capacious, is secure: four or five frigates might moor in it, and it would contain many sail of merchantmen. It is about three-fourths of a mile in depth, decreasing in width from half a mile to the bridge, towards which the water shoals gradually from eleven and twelve fathoms, with a muddy bottom, to a distance of about 70 yards, where the subsoil is sandy or gravelly. Opposite the Egripus Island water may be procured for shipping, though it is not always good or plentiful: the quantity of vegetable substance in the pools which are formed previous to its flowing into the sea renders it frequently unwholesome. A round tower on the eastern point, called the Bour, is a good mark for the entrance of this port from the southward.

To the southward of the bridge there are two ports; the inner is supposed to be the Port Aulis, where the Grecian fleet assembled previous to the Trojan war. It is about a mile across each way, with six fathoms generally all over, but a bank of 14 feet in the strait which communicates with the outer port, consisting of a belt of reefs and rocks, which with the waters between them, and the inner port, make a safe harbour for small vessels. The entrance is clear and free from danger, and although open to the Gulf of Telemon, there is never any sea of consequence; but the gulls which come down off Mount Khandar are very heavy.

On the southern shore of the island, between the three mouths of the river, there are the remains of Cyclopean walls of very high antiquity. The blocks of stone, which are very massive, rude, and irregular, but fitting closely, are of limestone, and in construction the walls resemble those of Mycenae. This is the ancient Aulis; though there may have been houses at a less elevation and nearer the shore more convenient for commerce, the ascent to these ruins being steep and difficult. The site of Eretria in Euboa has not been exactly discovered, but it must have been near the west coast and south of Chalcis.

![Image of Euboea coin](https://example.com/ewb059540.png)

**Coin of Eretria.**

*British Museum. Actual size. Silver. Weight 655 grains.*

The country around Egripus is flat for many miles, and very prettily studded with kiosks and small villages. An aqueduct which, commencing at the foot of Mount Delphi,
winds its way to within half a mile of the town, forms a very picturesque object. Though it no longer conveys water, it is by no means in a ruinous condition. It appears to be of Venetian construction, and there are several ruins of houses in the neighbourhood: one especially, called Kastri, sited on the apex of an inclined rise, and presenting towards the sea a steep cliff, resembles the baronial castles of the north of Italy.

Euporis is capable of vast improvements, and of becoming of great commercial importance. Little expense would render the passage of the bridge practicable for vessels of 500 and 1000 tons, since it might be rendered, thereby another outlet for the coast of the Negropont, which is the worst in the Archipelago, as the Dardanelles already sets on its iron-bound coast, which offers no port whatever, and is a lee-shore in the strong and prevailing north-west wind.

From Euporis there is a carriage road to Karystos, at the southern extremity of the island.

History of Euboea. - The first inhabitants of this island were probably a Pelasgic race, which is said to have occupied, before the historical times, most of the islands of the Euboean Sea. The Dryopes from Mount Ëtis were said to have founded Carysbus and Styra (Herodotus, vi. 46; Thucyd. vi. 57); and the Athenians founded Chaleis and Eretria, before the siege of Troy. Homer (Hym. ii. 356) calls them one of the first and most primitive cities, and mentions them as having taken a distinguished part in the expedition against Troy. The Hestiotids were said to be a colony of the Thracians, a Pelasgic tribe: but the Athenians appear to have been from a very remote epoch the principal colonizers of the island. By the middle of the 7th century the island was divided into three independent, but allied towns, which had advanced to a high state of prosperity, holding dominion over the isle of Aegina, Tenea, Euri, and Cos, and sending colonies to the coasts of Macedonia and Thrace, as well as to the shores of central Italy and Sicily. After the Greek settlement in Sicily, and Cumae, one of the oldest in Italy, were colonies of Chaleis. Eretria and Chaleis, however quarrelled, and Thunylides (i. 153) mentions the war between the two states as one of the oldest wars on record among the Greeks. This war however was not united or at termination; and we find in the sixth century B.C. the two communities still flourishing, under the government of their Hippobota, or wealthier citizens. Unfortunately for them, they co-operated with Cleomenes in his invasion of Attica, which followed the expansion of the Pisistratids, in consequence of which, after the Athenians had repulsed Cleomenes, they invaded Euboea, about 500 B.C., defeated the Persians, who had come to the assistance of Chaleis; and having taken the latter city, they punished it severely, plundered it, and made it a dependency of Athens. Afterwards, the Euboeans, together with the Athenians, sent assistance to the Ionians in Asia in their war against Darius Hystaspes; and their troops were among those which buried Sardis (499 B.C.). The first invasion of Greece was the consequence of this expedient. The Satrapis, Dais and Artaphernes, landed in Euboea with an immense force, completely destroyed Eretria, and sent its inhabitants as slaves into Asia. The Persians then crossed over into Attica, where they were defeated at the battle of Plataea, in consequence of which the land of Chaleis and other towns of Euboea manned ships, which, uniting with the rest of the Greek fleet, fought with the Persians at Artemision. The Hestiotids also favoured the Persians. After the end of the Persian war we find the city of Chaleis, like all the other states of Euboea, war in Euboea against the Carysbusians, who had revolted, and reducing them to subjection. A general revolt of Euboea against Athens broke out in 433 B.C.; but Pericles, with some regular troops, marched into the island, and recovered possession of it: the towns of Euboea were reduced to the condition of tributaries to Athens, and an Athenian colony was settled at Oreus in the territory of the Hestiotids, which was the fertile plain on the north coast of the island. This island was of great importance to the Athenians; it furnished them with corn, supplied them with ores, and was considered of more value to them than all their other coasts put together. During the Peloponnesian war, after the defeat of the Athenians in Sicily, another general revolt of Euboea took place, and other attempts were made to secure the protection of Leuctra, but afterwards returned to the Athenian allegiance, when Athens had recovered its independence; and from that time its four principal towns, Chaleis, Eretria (which had been rebuilt near the site of the old town destroyed by the Persians), and the towns of the Parea, possessed a kind of municipal independence under the supremacy of Athens, which supremacy was at times disputed by the Thebans, who were at last obliged to leave the island. The Euboeans however joined the Theban league against the Spani and fought under Epeneto, in the general postulation into which the principal states of Greece fell after the death of Epeneto, Euboea seems to have been left in great measure to itself. Its principal towns were under the rule of chiefs, or tyrants, however, they were called, without any interference on the part of the Athenians. About 340 B.C. Callias and Tauristhenes, sons of the late tyrant Mnesarchus, who were ruling in Chaleis, made overtures to Philip of Macedon, in order to have his assistance in subduing the rest of the island, an opportunity which was eagerly seized by Philip. Philip, who was at the same time tyrant of Eretria, applied to the Athenians to check Philip's interference. The Athenians sent an expedition under Phocion, who defeated the Chaleisians after hard fighting; but this led to no favourable result to the Athenians, and the Macedonian influence and the Macedonian influence was established over the island. While Alexander was absent in his Persian wars, the Chaleisians increased and improved their fortifications, which extended to the main land over the bridge they had made, connecting the island with the mainland. They maintained their influence to Greece, Chaleis and the other towns of Euboea contracted alliance with Rome, and they remained steadfast to that alliance during the Euboean war. (Livy, xxxv. 37, 38.) Chaleis afterwards submitted to Antichus, (Liv. xxxv. 39, 51.) In the Chaleisian war the defeat at Corinth, Chaleis was taken and destroyed by the Romans, and the whole island fell under the dominion of Rome. It then gradually declined in population and importance; and Pangani and Dion speak of its fallen state as the Greek empire.
Land and New Holland, while the intermixture of other plants which this lordly tribe permits, is compared, with its own great extent, but small and partial. Wherever you go, one species or other is constantly before you.

No trees in the world so constantly or rapidly arrive at gigantic dimensions: they often become hollow, and are the food by day and night. Frazer found a hollow Eucalyptus at Moreton Bay, used by the natives as a cemetery. Even at Swan River, where, according to the report of Frazer, the species are stunted, they also attain a huge size, as is proved by what that traveller says of the Angophora, with its terms 'magnificent' and 'gigantic,' and which, in fact, are Eucalyptus calophylla. A height of 150 ft., and a girth of from 25 to 50 are not uncommon dimensions of these trees. Their timber is represented as highly useful for domestic and building purposes, and it is said that the Angophora is the fodder shelter at night.

Eucalyptus is particularly brilliant furnished the Eucalyptus tree. In this erudition, (Companion opening. with ties, has been amused, very used gigantic timber of these species, as the timber of giants, in the situations, to the natives of the more extensive lands.

Weeping Gum—Eucalyptus calophylla. It is used in the same way, and it is a valuable species, as is evidenced by the use of this instrument and the modifications which it has received, it has been ascertained that the air is liable to no essential variation of composition except such as arises from local and temporary causes.

The use of the electrical, termed eudiometry, has, since its original contrivance, been extended to all gaseous mixtures, but especially to determining the quantity of oxygen which they contain when resulting from the operations of analysis; and it is an essential instrument in the chemical
investigation of bodies, not merely such as are naturally gaseous, but which become so by the changes to which they are subjected during chemical research.

The objects to which the use of the endometer depends, so far as atmospheric air and oxygen gas are concerned, is that of exposing them to the action of some substance, whether solid, fluid, or gaseous, which, on account of its affinity for oxygen, combines with it and leaves the gas an altered or modified matter.

The endometer invented by Dr. Priestley arose from, and was connected with, his great discovery of oxygen gas and the fact which he ascertained of its absorption by another gas, which he called nitrous air, since called by various other names, but the mixture of this gas, dioxide of azote, biscarons of nitrogen, and nitric oxide gas.

This gas may be considered as nitric acid deprived of a large portion of its oxygen, which is effected by dissolving a metal in it, as, for example, copper, silver, or mercury, &c.; and it retains the diameter, or at least as much as the greatest purity. The nitric oxide thus derived is being disposed to retain the oxygen which the metal has taken from it, and to absorb it with great facility from all such gaseous mixtures as contain it: the evolutions of its action are in forming gas from azote, or by the reduction of nitric oxide, and the reproduction of nitric acid; and the quantity of oxygen absorbed is determined by the degree of condensation which is produced by its action.

Dr. Priestley's method was extremely simple: he took a phosphoride of holophosphuric about an ounce of water, filled it with water, and displaced it with atmospheric air, or with the gaseous mixture to be examined: the volume of this being noted, it was transferred, over water, into an air-jar about an inch and a half in diameter. An equal volume of nitric oxide, and then of copper was led into it, and the use of the endometer to and fro about two minutes: if the diminution was very considerable, another volume of nitric oxide was added. When this part of the process was over, the gas was transferred to a glass tube about two feet long, and then divided into three parts: thus, the endometer was divided into three parts: and each of these parts was divided into two, and so on. After noting the volume of the gas, the result was expressed in measures and decimal parts; thus, when equal volumes of common air and nitric oxide were mixed, and they afterwards occupied one-third of the volume, and then the third of a metal, and the third of a metal, the endometer was divided into three parts as noted above.

Although Dr. Priestley determined the volumes of oxygen and nitric oxide required for mutual saturation, he appears not to have considered, not to have considered the endometer, but to have calculated the endometer, to and fro about two minutes: if the diminution was very considerable, another volume of nitric oxide was added. When this part of the process was over, the gas was transferred to a glass tube about two feet long, and then divided into three parts: thus, the endometer was divided into three parts: and each of these parts was divided into two, and so on. After noting the volume of the gas, the result was expressed in measures and decimal parts; thus, when equal volumes of common air and nitric oxide were mixed, and they afterwards occupied one-third of the volume, and then the third of a metal, and the third of a metal, the endometer was divided into three parts as noted above.

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immediately apparent, making the deduction above stated from the evidence.

Dr. Hope’s eudiometer is represented in the annexed figure. It is used with a solution either of sulphate of iron impregnated with nitric oxide or with solution of sulphur of potassium. This eudiometer consists of a small bottle, capable of holding about three cubic centimeters, the eudiometric fluid, and it is perforated and furnished with a stopper at A. Into the neck of the bottle a hollow graduated tube, c, closed at the upper end, is accurately fitted, by grinding; it holds precisely a cubic inch, and is divided into 100 equal parts. To use the apparatus, the bottle is first to be filled with the solution to be employed, and covering the mouth with a flat piece of glass being then removed, the open end of the tube containing the gas to be examined is to be inserted.

The instrument being removed from the water, is to be inverted. The gas ascending into the bottle, it is to be brought into thorough contact with the liquid by brisk agitation, by which absorption of gas occurs; to supply its place the stopper at B is removed under water, a quantity of which rushes into the tube; the stopper is then replaced, and these operations are alternately renewed, till no further diminution of air is perceptible, the neck of the bottle being in water, and is held inverted for a short time, and the diminution is then measured by the graduated scale.

Dr. Henry has pointed out some difficulties attending the use of this instrument, and he obviates which he has substituted a caoutchouc bottle for the glass one, as shown in the annexed figure at A. The tube A is accurately ground into a short piece of very strong tube of the same internal diameter, of which the inner surface of which is made rough by grinding, and shaped as represented, that it may more effectually retain the neck of the elastic bottle when fixed by waxed thread. This instrument, being used in the manner as Dr. Henry’s. The only difficulty is in returning the whole of the residuary gas into the tube, but the art of doing this is readily acquired by practice.

Pepys has contrived a eudiometer, in which a caoutchouc bottle is employed as in Dr. Henry’s. This instrument, from the inventor’s statement, appears to be susceptible of great accuracy; for he states that he is able to measure an absorption of only 1/100 of the gas employed. For an account of one of these consequently well arranged, and a comparison of its results with others, see Phil. Trans., 1805. The parts are too numerous for us to insert figures of, and without them a description would be scarcely intelligible.

Having now described the use of nitric oxide, sulphur of potassium, and phosphorus, as eudiometrical substances, and noticed the more important instruments in which they are employed, we shall notice the eudiometer of Volta, and the eudiometric body which he made use of.

Volta’s method of determining the composition of gases is in this manner, or of the quantity of oxygen contained in gaseous mixtures, is by means of combustion with a known volume of hydrogen gas; for it has been ascertained that when a mixture of oxygen and hydrogen gases is fired, one-third of the volume of the gas in the tube is, if the combustion of oxygen, we have only to observe the measure of the contraction of volume to ascertain that of the oxygen which was present.

Of Volta’s eudiometer various modifications have been proposed, and the description which follows is one of the principal above mentioned. According to Berzelius, that invented by Mitscherlich is to be preferred, on account of the simplicity of its construction and the accuracy of its results. We shall therefore describe the principle of it, and as it will at once occur to the chemical reader that it is a slight modification of Priestley’s and Cavendish’s detonating tubes.

This instrument, as represented by the annexed figure, consists of a very thick glass tube from 18 to 54 inches long, and about four lines internal diameter; it is graduated, open at one end, and closed at the other. Near the top A the tube is perforated with three or four small holes at such a distance as readily to allow of the passage of the electric spark between them, and externally hooked; near the orifice, B, the tube is laterally perforated and furnished with a glass cock, which is shut after the tube is filled with gas to be examined: this is, of course, to prevent the loss of gas by the expansion accompanying the detonation of the spark. When this is over, the cock is turned under either water or mercury, and the fluid being perfectly secured, the condensation is exactly noted by bringing the fluid within and without the tube to the same level.

Another variety of Volta’s eudiometer is represented by the opposite figure. It is more simple in its construction than the former, and has certain in its results, on account of the escape of gas which occurs if it be not immured sufficiently deep in water or mercury; it is a modification of an instrument invented by Dr. Priestley. The only additional explanation necessary is, that A is a moveable metallic wire with a knob at the end, which is raised near enough to the knob at the top of the instrument to allow of the passage of the electric spark.

Dr. Ure has also contrived a modification of Volta’s eudiometer, which renders the experiment easy of performance by a single person. This instrument is shown by the figure. It consists of a tube, having an interior diameter of from 2-10ths to 4-10ths of an inch; its legs are nearly of equal length, each being from six to nine inches long. The open extremity is shown at A, the other being a little flattened; the other is hermetically sealed, and has two platinum wires inserted; the legs are about one-fourth to one-half an inch asunder.

The instrument is used as follows: it is to be filled with water or mercury, and the gas transferred into it in the ordinary manner; then being upright, part of the fluid in the open leg is displaced by inserting a glass rod, or in some other manner. The open leg ought to contain at least two inches of air between the thumb and the mercury; this atmospheric column serves as a recoil-spring, enabling the operator to explode considerable quantities without inconvenience or danger. The open leg being grasped by the hand, the thumb is to be placed light fingers, so as to close it, and at the same time to touch one of the wires; a spark taken from the conductor to the other wire passes through the gas, inflaming it, and is conducted off by the thumb and hand. The gas in expanding depresses the fluid beneath it, whilst, as already noticed, a passage is left through the thumb acts as a spring to restrain the violence of the explosion. If a charge from a jar is to be passed, then the thumb must not be allowed to touch the wire whilst closing the aperture. When the jar is charged, the wire connected with the outer coating is first to be hooked upon the eudiometer wire nearest the thumb, and securely retained there, so as not to slip during the experiment; and then the knob of the jar is to be brought to the other wire and the gas inflamed.

After explosion, when the condensation of volume ensues, the thumb will feel pressed down to the orifice by the subsequent atmospheric pressure. On gradually sliding the finger to one side and admitting the air, the mercurial column in the sealed leg will rise more or less above that in the other; mercury is then to be poured in till the equilibrium is restored, and the resulting volume of gas is then read off.

Dr. Ure states that with the above instrument he has exploded half a cubic inch of hydrogen mixed with a quarter of a cubic inch of oxygen, as a close and nearly equal of an olefiant gas explosive mixture, without any unpleasant concussion or noise.

Dobereiner has suggested a eudiometrical process, founded on his curious discovery of the property which spongy platinum possesses of causing the combination of oxygen and hydrogen gases. In this eudiometer the combi-
bination occurs without explosion, and yields results of great accuracy. Dobereiner found that when the spongy platinum was mixed with certain substances, as to prevent its immediate and explosive action, it caused the oxygen and hydrogen to combine with moderate rapidity. The late Dr. Henry, upon a more minute examination of these phenomena, recommended a mixture of three parts of spongy platinum and two of fine china clay made into a paste with water and moulded into spherules about the size of a pea; these were fastened to a platinum wire, which may subsequently be removed after the action was over. They should be heated and suffer to cool a short time before use: they suffer no loss of power, and possess the great advantage over the electric spark, that they act upon gas mixtures of very complicated composition, and hydrogen, that they cannot be fired. The late Dr. Turner ascertained that it was possible to determine the presence of 1/4 of hydrogen or oxygen in a gaseous mixture; whereas, when these gases formed 1/4 of a minute, they could not be detected by electricity. The effect takes place more rapidly in large than in small tubes.

There are various gases which impede the action of the platinum balls. It appears from the experiments of Dr. Henry, that when the compound combustible gases, mixed with other gases, with hydrogen, and with oxygen, are exposed to the balls of platinum, the several gases are not acted upon with equal facility; that next to hydrogen carbonic oxide is most disposed to unite with oxygen, then olefiant gas, and lastly, carburetted hydrogen.

It is observable that the proportion of certain gases of retarding the action of platinum, when they are added to explosive mixtures of oxygen and hydrogen, is most remarkable in those which possess the strongest attraction for oxygen. Heat occasions the platinum balls to act in many cases in which no combination would occur without it.

In concluding this historical sketch of eudiometers and undiometers, we repeat an observation already made, viz., that whatever volume of the mixed gases may disappear after the action of the action of the platinum balls, one-third of such portion is to be considered as oxygen and two-thirds as hydrogen, the result of their combination being water, formed of these proportions of its constituent gases.

EUDOCIA, daughter of Leontius, an Athenian sophist, was called Athens before her baptism. She was carefully instructed by her father in literature and the sciences. After her father’s death, being deprived by her brothers of all share in the inheritance, she repaired to Constantinople, married Theodosius, who was so pleased with her that she induced her brother to marry her, a.d. 421. Eudocia surrounded herself with learned men; but the emperor, through jealousy, dismissed all her court, and had her exiled to Palestine, where she continued her deceased husband’s work, and there embraced the opinions of Eutyches, and supported by her liberality influenced the monk Theodosius, who forced himself into the see of Jerusalem, after driving away Jernestus, the orthodox bishop, and kept it until he was himself driven away by order of the Emperor Marcianus. Euthymius, called the Saint, by his reasonings brought back Eudocia to the orthodox faith, after which she spent the remainder of her days at Jerusalem, where she died in 460. With her, in the presence of the guilt with which her husband had charged her. Eudocia caused a book to be written, in which Photius quotes a translation in verse of the first eight books of the Old Testament. There is also a work attributed to her, which was translated into Latin by Echard, and was published under the title of ‘Homerici Comentosae Græce et Latine, interprete Echardo,’ Paris, 1576. It is a life of Jesus Christ, composed of lines taken from Homer. Most critics believe that it is not the work of Eudocia, though Dusange is of the contrary opinion.

EUGENE, the son of the preceding and of Theodosius II, married Vizena, a young girl, after the assassination of her husband by Petronius Maximus, she was obliged to marry the usurper. Eudocia, out of indignation and revenge, called in Genesio, king of the Visigoths, who came to Italy, placed on the throne, and carried Eudocia to Africa with him. Some years later, she was sent back to Constantinople, a.d. 462, where she died.

EUDOCIA, the widow of Constantine Ducas, married Romanus Diogenes, an officer of distinction, a.d. 1668, and associated him with her on the throne. Three years after Michael, her son, by means of a revolt, was proclaimed emperor, and caused his mother to be shut up in a convent, where she lived the rest of her life. She left a treatise on the genealogies of the gods and heroes, which displays an extensive knowledge and the best taste. It was printed in Villlion’s ‘Anecdota Graeca,’ 2 vols., 4to. 1781.

EUDORA. [MEODUA.] EUDOXUS, a native of Cnidus, a city of Caria, in Asia Minor, and son of Archelaus, flourished about 370 a.c. He studied geometry under Archytas, and afterwards travelled into Egypt to study the sciences under the priests of that country. Diogenes Laertius informs us that he and Plato studied in these schools for about thirteen years; after which Eudoxus returned to Athens, and opened a school of his own, which he supported with such success as to excite the envy even of Plato himself. Proclus informs us that Euclid very liberally borrowed from the elements of geometry composed by Eudoxus. Cleerio calls Eudoxus the greatest astronomer that had ever lived; and we are informed from Petronius that he retired to the top of a very high mountain that he might observe the celestial phenomena with more convenience than he could on a plain or in a crowded city. Strabo (p. 119) says that the observatory of Eudoxus was at Cnidus, where the astronomer saw the star Canopus. Vitruvius (ix. 9) describes a sun-dial constructed by him; and Strabo (p. 390) hurges him as a distinguished mathematician. Nothing of his works remains. He died in the fifty-third year of his age. [Astronomer]

EUDOXUS, of Cyzicus, was sent by Ptolemy VII. of Egypt, on a voyage to India about a.c. 125. (Strabo, p. 98, Cusaub.) The passage of Strabo referred to contains an account of his adventures. From this Eudoxus, or another, the moderns have derived some materials for his great work (379, 536, &c.).

EUDYLITE, a mineral which occurs both crystalized and massive. The crystals are generally small. The primary form is a rhombid; the colour is red or brownish-red, and the crystals transparent or opaque. Lustre vitreous, sometimes dull. Sp. gr. 2.9; Hardness 5.5. Streak white. Fracture uneven. The massive varieties are imbedded and amorphous.

It occurs at Kandarursuk, in West Greenland. Before the blow-pipe it fuses in a lead-green scoria.

According to Stromeyer it consists of—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>52.47</td>
</tr>
<tr>
<td>Zirconia</td>
<td>10.89</td>
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<tr>
<td>Lime</td>
<td>10.14</td>
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<tr>
<td>Sodium</td>
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<tr>
<td>Muriatic acid</td>
<td>1.83</td>
</tr>
<tr>
<td>Water</td>
<td>1.86</td>
</tr>
</tbody>
</table>

99.67

EUDYMYAMS. [Cicullin, Ciculinn, vol. viii., pp. 206 and 211.]

EUDYTES. [Divers, vol. ix., p. 37.]

EUGENE, FRANÇOIS DE SAVOIE, commonly called Prince Eugene, was internally descended, in the third degree, from the ducal house of Savoy, but was a French subject by birth, being a younger son of the Comte de Suisse, and born at Paris, October 18, 1663. He was designed for the church, but having formed a decided preference for the French in 1692 he was less successful. The duke having returned to the French alliance, we next find Prince Eugene commanding the army in Hungary, where he won a great victory over the Turks at Zenta, on the river Tissa, Sep-
October 11, 1697. The peace of Carlowitz (1699) closed this scene of action; but a more brilliant one was opened in 1701 by the war of the Spanish succession. During two years Eugene maintained the imperial cause in Italy with honour, and his sure foundation was established successively by Catinat, Villeroi, and Vendôme, against the last of whom he fought the decisive battle of Luzara, August 1, 1702, in which the flower of his troops was destroyed. At the end of this campaign he returned to Vienna, and was appointed as the council of war.

In 1704 he commanded the imperial troops at the battle of Blenheim, August 13, 1704. The successes of the French in Piedmont made it expedient for him to return thither in 1705. He soon restored the duke of Savoy's declining fortunes; and he was the first to receive the news of the battle of Fokkeville, September 27, 1706, after which the French evacuated the country. He was thus set again at liberty to co-operate with Marlborough in 1706, and had a share in the victory of Oudenarde, and in the capture of Lille, the siege of which was entrusted to him. He was wounded at the bloody battle of Malplaquet, of which he was the chief advisor, and in which he led the attack upon the left wing. On the death of the Emperor Joseph in 1711, he took an important part in securing the succession to his brother Charles. He invaded England at the end of that year, in hope of preventing the secession of England from the alliance. He was received as his services deserved, but made no progress towards his object; for the dismissal of the Whig ministry was soon followed by its restoration, and the king, whom he was afterwards trying to reconcile with his enemies, gave no promise of liberality to treaty, Eugene invaded France in 1712 with little advantage, and it became evident that the interests of the empire would be best consulted by peace: the preliminaries were accordingly signed at Rastick, March 6, 1714.

In 1716 Prince Eugene, who had been made Marquis of Turkes, and won the battle of Peterwaradin, August 6, against an enormous disproportion of numbers. In the following year he besieged Belgrade with 40,000 men. With troops wasted by disease, he was driven by the Austrians to Turkestan in the middle of the next year, and opposed by a powerful garrison from within, he was in the utmost danger, when, with the happy boldness which distinguished him, he seized the right moment, and inflicted a signal defeat on the army which threatened him. He was then returned to Vienna, and on the death of Sigismund, August 27, 1717, on the death of Sigismund of Saxony, he was proclaimed emperor, but withdrew his candidature.

He took up his residence at Vienna, honoured and trusted by the emperor, in whose political service he was much employed. In 1733 a fresh quarrel with France caused him to resign the command of the army on the banks of the Rhine. This war is said to have been undertaken against his advice: at all events age had diminished his energy: he contended with standing on the defensive, and used his influence to effect a reconciliation. Preference was then given to the Prince of Salm, and he died suddenly in that capital, April 21, 1736, aged 73.

As a general, Prince Eugene ranks among the first of his kind, but that kind was not of the highest order of excellence. His art of war, neither was he famous for skill in manoeuvring or combining the operations of distinct masses upon one object. His characteristics were penetration, quickness of perception, decision, and what usually goes along with them, readiness of execution. He was daring rather in making the best of given circumstances than in bending circumstances to his will beforehand. It is said that he always took great pains to learn the character of the general opposed to him. Careless of his own person he was, and his repeated wounds in battle, he was also somewhat prodigal of his soldiers' lives. However, he threw a glory round the Austrian arms such as has never dignified them either before or since.

The best account of his exploits is "L'Histoire du Prince Eugène," by de Maubillon, but published without his name. In English, there is Campbell's Military History of Prince Eugene and the Duke of Marlborough, 2 vols. fol.; and several smaller works. Prince Eugene wrote memoirs of himself, which have been published both in French and in English.

**EUGENIA**, a genus of dicotyledonous polyleptalous plants of the natural order of Myrtaceae; so named in honour of Prince Eugene of Savoy, who was a patron of botany and horticulture. The genus, as at present constituted, contains nearly 200 species, though numbers have been removed to the genera Nellitris, Jessinia, Myrcia, Syzygium, Caryophyllus, and Jambooa, in which are now contained the Clove tree, the Rose apple, and Jamoon of India, formerly included in Eugenia. This genus is confined to the hot and tropical parts of the world, as Brazil, the West India Islands, and Sierra Leone, and extends from the Moluccas and Ceylon to Sibthorpe and the foot of the Himalayas in Asia.

Eugenia is characterized by having the tube of the calyx a roundish form, and the limb divided into four parts, the petals equally in number, and inserted on the calyx. The stamens are numerous. The ovary 2-3-celled; with several ovules in each. Seeds one or two, roundish and large, with the cotyledons and radicle united into one mass. In some of the species resemble many myrtles.

Like the family of which they belong, some species of Eugenia secrete a warm volatile oil in their herbage parts; abound in tannin; yield good wood; and a few have fruit which is edible, though not very agreeable, from being somewhat bitter. The following is an example:

**EUGENIA JAMBOSA**, or *Eugenia jambos*, being the fruit of Jambos, or the Caribsean Apple, which is large, round, smooth, and of a dark purple colour; usually one, occasionally two-celled, containing large roundish seeds.

The Pimenta is cultivated with great care in Jamaica, and is a small tree which bears annual fruits. The leaves are divided into regular walks, and begin to bear when three years old, but are not in perfection until they have been planted seven years. They thrive best in rocky lands, or a rich soil having a gravelly bottom. Mr. Banister Edwards observes that in the native of South America and the West India Islands, especially Jamaica, and from being cultivated, there is often called Jamaica Pepper. The tree is very handsome, often 30 feet high, and much resembles the Clove tree in the form and appearance of its leaves as well as in habit. The expanse of the leaves which branch towards the top. The larger branches are round, the younger compressed, and the twigs as well as the flower stalks pubescent; the leaves are petiolate, oblong or oval, smooth, and marked with pellucid dots, forming a dense evergreen foliage; the flowers are white and terminal, and are divided into three forked panicles; the flowers are small, without show, and conformable in structure to the character of the genus. The berry is spherical and crowned with the calyx; waxen ripen, smooth, shining, and of a dark purple colour; usually one, occasionally two-celled, containing large roundish seeds.

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Eugenia Micheli is a Brazilian species, cultivated in Martinique, whence it is called *Cerisier de Cayenne*, as it yields a small edible fruit.

**EUGENIACRINITES.** [Encrinites, vol. i., p. 393.] N.B. The Rev. Lansdowne Guidling, in his notice of a perfect recent Encrinus, found in the Caribbean seas, and which, according to him, comes nearest to the Stag's Horn Encrinus of Parkinson, says that its capsule is equal to that of him.

Vol. X.-K
EUGENIUS I, a native of Rome, was elected by the Romans, A.D. 638, as successor to Martin I, who had been sent into banishment by the Thracian Chersonesians by order of the Emperor Phocas. Martin died at Middlesbrough. Martin dying in the following year, Eugenius continued in dispute with the court of Constantinople, but was afterwards reconciled to it.

EUGENIUS II, a native of Rome, succeeded Paschalis I, A.D. 642, in the midst of great disorder which occurred at Rome owing to the corrupt state of society and mal-administration of that city. To reform these, the emperor, Louis the Great, sent his son Lotharius to Rome, who, on entering the city, was received by the clergy and people and his pontificate was duly acknowledged by all other churches, who had grown to an enormous extent. He confirmed the right of electing the pope to the clergy and people of Rome, but under the condition that the pope elect should swear to the emperor before the imperial council to be submissive to the imperial authority. Eugenius held a council at Rome, in which, among other things, it was decided that in every episcopal residence, as well as in every country personage, there should be a master for teaching the people and explaining the Scriptures. Eugenius died in 652, and was succeeded by Gregory IV.

EUGENIUS III, a native of Pisa, of the Cistercian order, and a disciple of St. Bernard, succeeded, A.D. 1114, Lucius II, who had died a blow from a stone inflicted in a riot of the Roman people. Amalido da Brescia was then preaching his reform at Rome, the senate had declared itself independent of the pope, and Eugenius was obliged to take up his residence at Viterbo. After some fighting and many mishaps, the pope, accompanied by the bishops of Forno, Todi, and the Romans, Eugenius repaired to France in 1117, and the following year held a council at Rheims. He afterwards returned to Italy, and with the assistance of Roger king of Sicily defeated the Romans, and entered the city. Roger, however, being distrusted, obliged him to take refuge in Campania, where he received of St. Bernard the book De Consuetudine, the subject of which was advice on his pontifical station and its duties. After having resided some time at Segni he made peace with the Romans, and returned to Rome in 1122. He died the following year, and was succeeded by Anastasius IV.

It was under his pontificate that Grattamis, a Benedictine monk at Bologna, compiled his code of canon law called Decretum Gratiani, which greatly favoured the extension of Church law.

EUGENIUS IV, Gabriele Condulmero, a native of Venice, succeeded Martin V, in March, 1431. He was a most born pontiff. He drove away the powerful family of Colonna, including the nephews of the late pope, from Rome, charging them with having exhumed themselves at the expense of the papal treasury. Two hundred of their adherents were put to death, and the palaces of the Colonna were plundered; but their party collected troops in the country and besieged Rome. Eugenius, through the interference of Queen Joanna II, of Naples, defeated the Colonna, and obliged them to sue for peace and surrender several towns and castles they held in the Roman state. He afterwards made war against the various lords of Romagna, who were supported by the Visconti of Milan; and he appointed as his general the patriarch Vitelleschi, a military prelate, who showed considerable abilities and little scrupulosity, in that protracted warfare, by which the pope ultimately recovered a considerable portion of territory.

With regard to the case of the See of Milan, it appears that Eugenius, to prevent the election of a successor to the cardinal of Reims, who had been made the occupant of the bishopric by the last pope, proposed to create a prelate for that city, but by this measure the cardinal reserved his claim, and it was only in 1521 that the pope was able to create the new bishop without interference from the cardinal. Also the pope, with great difficulty, settled a dispute in which the papacy was involved with regard to the See of Genoa, and he was able to assert the supremacy of the Holy See.

Eugenius, who had been obliged to escape from Rome in disguise on account of a popular revolt, and had taken up his residence at Bologna, A.D. 1432, published another bull declaring his excommunication and that of his nuncio who presided at it, and convoking another council at Ferrara. Most of the fathers assembled at Basel refused to submit, and summoned the pope himself to appear before them, to answer the charges of tyranny, schism and heresies; and after a time the proceedings against them were resumed, and deposed him. Eugenius meanwhile had opened in person his new council at Ferrara, in February, 1438, in which, after annulling all the obnoxious decrees of the council of Basel, he declared his excommunication against the bishops who remained in that assembly, which he characterized as a 'satanic conclave, which was spreading the abomination of desolation into the bosom of the church.' The Catholic world was divided between the two councils; and to choose between them, the pontiff, on the advice of Annunzio VIII. of Savoy, who assumed the name of Felix V, and was solemnly crowned at Basel.

The council of Ferrara in the meantime afforded a novel sight. The Emperor John Paleologus II. came with Joseph, patriarch of Constantinople, and a number of twenty Greek bishops, attended by a numerous retinue, and took his seat in the assembly. The object was the recollecilation of the eastern and western churches, which Eugenius had greatly at heart, and to which Paleologus was also favourably inclined. He compelled the assent of the English and the Greeks against the Turks. The plague having broken out at Ferrara, the council was removed to Florence. After many theological disputations on the subject of the Holy Ghost, of the primacy of the pope, of purgatory, and other matters, the decree of reunion and concord was passed, and signed by both parties in July, 1439. The emperor and patriarch returned to Constantinople highly pleased with Eng ans; but the Greeks took offence at the terms of the union, the schism broke out anew, and the separation of the two churches has continued ever since.

A grave charge against Eugenius is, that he encouraged the Hungarians and Poles to break the peace they had solemnly sworn with the Turks, under promise that they should be well received and fed. He even sent Cardinal Julian as his nuncio to attend the Christian army. The result was the battle of Varna, 1444, in which the Christians were completely defeated, and King Uladislav of Poland and Cardinal Julian lost their lives.

Eugenius died at Rome A.D. 1447, after a reign of sixteen years, and in the sixty-fourth year of his age. He left the church in a state of division between him and his successor, Felix, his own state a prey to war, and all Christianity was in dispute for the progress of the Reformation. In the last days he is said to have expressed himself weary of agitation, and to have regretted the loss of his former monastic tranquillity before his exaltation. He recommended peace and conciliation to the cardinals assembled around him. He was succeeded by Nicholas V, in favour of whom Felix V, soon after abdicated. The pontificate of Eugenius forms a most stirring and interesting period in the history of Italy and of the church. An[?] and Am[es] Silvius, afterwards pope, have written the history of the council of Ferrara, with the deliberations of the councils and Balbo's Miscellanea.

EUCHARITE, a salmiac of silver and copper, discovered by Berzelius. It occurs in thin films of a shining lead colour; opaque; its texture is granular; it yields readily to the knife, and acquires a silvery lustre. It occurs in a copper mine in Sweden. Before the blow-pipe it exalts
EULABES. (Zoology.) [ROLLERS.]

EULABELLIA. (Zoology,) a genus established by Saviignv, and placed by Curier among his Dorsibranchiata. 

EULEN-SPIEGEL. [ENGLISH DRAMA, vol. ix., p. 423.]

EULER, LEONARD, a celebrated mathematician of the 18th cent., was born at Basle, in Switzerland; his father, Paul Euler, was the Calvinistic pastor of the neighbouring village of Riechen. He was a man remarkable for unostentatious piety, and imbued with a considerable knowledge of mathematics, which he had acquired under the tuition of James Bernoulli.

After being instructed by his father in analytical science, young Euler was sent to the university of Basle, in which John Bernoulli was at that time professor, and by his rapid progress and wonderful mental acuteness he so far gained the esteem of his teacher and of the sons, Nicholas and Daniel Bernoulli, that his father was easily dissuaded from his original intention of forming his son into a divine, and wisely allowed him to pursue unshackled the high distinctions then conferred by a profound scientific reputation.

A prize having been proposed by the French Academy of Sciences on the management of vessels at sea, the ambition of Euler, then only nineteen years of age, induced him to attempt an essay, which was received with considerable applause, though the prize was conferred on Bouguer, an old and experienced professor of hydrography.

The Academy of Sciences at St. Petersburg was then raising to a distinguished rank amongst similar institutions in Europe under the fostering patronage of Catherine I., which was carried on by her successor Peter II., whose son was the celebrated Bernoulli above mentioned. On the retirement of Daniel Bernoulli, Euler was appointed professor of mathematics under Peter I., in 1733; soon after which he married a Swiss lady named Gsell, by whom he had a numerous family.

His works previous to the date at which we have arrived were, with few exceptions, confined to those mathematical questions arising from the progressive march of the Integral Calculus, which, at that time, caused much emulation in France. A treatise on the theory of music, and one on arithmetic, together with numerous papers in the Petersburg Memoirs, chiefly on astronomical and purely mathematical subjects, among which are contained his views on the solution of isoperimetric problems, which embodied the profound researches on a matter of great analytical difficulty previous to the discovery of the Calculus of Variations by Lagrange. Upon the fall of Biron he gladly accepted an invitation from the king of Prussia to visit Berlin. When he was introduced to the court in 1741, he was so much struck with the peculiarity of his conversation that on requiring an explanation, he replied that he had just returned from a country where those who spoke were hanged.

The princess had endowed him with a title, and desired to profit by the presence of Euler in Berlin, requested to be favoured with instructions on the known facts in the physical sciences. To this wish he fully acceded on his return to Petersburg in 1766, by publishing his celebrated work, ‘Letters to a German Princess’ (3 vols., 8vo., 1768) in which he discusses with clearness the most important truths in mechanics, optics, sound, and physical astronomy, having published previous to this date several isolated treatises and some hundred memoirs touching on every known branch of the theoretical and practical portions of that science. His residence in Prussia he was much employed by the enlightened monarch who then governed that kingdom in questions connected with the mint, with navigable canals, etc. In the midst of such varied employments he was not forgetful of the ties which bound him to his native home, nor, having learned his father’s death, he went in 1750 to Frankfort to receive his widowed mother, and brought her to Berlin, where she lived until 1761, enjoying with a true father’s feeling the generous distinction to which her son had been raised by the triumphs of his abilities.

An incident which occurred in 1760 showed how highly Euler was in general esteem. The Russians having entered Brandenburg, advanced to Charlotteburg, and plundered a farm which belonged to Euler. When General Tottelen was informed who the proprietor was, he ordered immediate reparations to be made to an amount far above the injury, and the Empress Elizabeth presented him with 4000 florins.

As a consequence of his unceasing application to study, Euler had the misfortune to lose the sight of one eye in 1735, and in 1766 that of the other; he however continued his valuable researches, some of his family acting as amanuensis, and his powers of memory are said to have been unimpaired by the accident. In 1762 he accepted the invitation of the empress Catherine II. of Russia to return to Petersburg in 1766, where he would have fallen a victim to an accidental fire which destroyed his house and property in 1771, but for the courageous efforts of a fellow-countryman M. Gronron, who leaped from his window. His manuscripts were saved by the exertions of Count Orloff.

On the 7th of September, 1783, after some calculations on the motions of comets, then newly invented, Euler was found dead at the age of 72—died 1783, at St. Petersburg, bequeathing to the world all his knowledge of the nature of a man away in his arms. His manuscripts were saved by the exertions of Count Orloff.

Every useful subject of mathematical research engaged at some time the attention of Euler; and for relaxation he amused himself with questions of pure curiosity, such as the knight’s move in chess so as to cover all the squares.

His various researches have been applied to the theory of geometry of situation, a subject still imperfectly known. The following is one of the questions which Euler has generalized.—‘At Königsburg, in Prussia, the river divides into two branches, with an island in the middle, connected by seven bridges with the adjoining shores; it was proposed to determine how a man should travel so as to pass over each bridge once and only once.’


EULILLSA. A genus of marine Testaceous Gastropods, established by M. Risso.

Generic Character.—Shell turreted, acuminate, polished, with many whorls; aperture ovate, acuminate posteriorly; external lip thickened, generally forming numerous obsolete warts. Openings profusely and irregularly dotted.

Mr. G. B. Sowerby, who gives this generic character, says (Zool. Proc. 1834) that this genus of marine shells appears to be most nearly related to Pyramidea and Rissoa. A species, he adds, which has been long known has had the external sculpture removed by the effects of SOLUTION OF SALTS by sea-water, and the shells become dotted by minute writers; and a fossil species has been placed by Lamarck among the Bulini, under the specific name of B. terellolus. Mr. Sowerby separates the genus into the two
divisions below stated, which are characterized by the two species above mentioned; one has a solid columnella, and the other is deeply umbilicated. All the species, he observes, are remarkable for a brilliant polish externally, and the shells are frequently slightly and somewhat irregularly twisted, apparently in consequence of the very obsolete varices following each other in an irregular line, principally on one side, from the apex towards the aperture. He describes sixteen species, chiefly from Mr. Cuming’s collection.

Geographical Distribution.—Wide; principally found, as yet, in warm seas (South and Central America, and Pacific Ocean, Australia) but there are several British species.

Habits.—The species found by Mr. Cuming were dredged or otherwise collected in sandy mud, coarse sand, and coral sand, on mother-of-pearl shells, or on the reefs; at depths (not including the reefs) ranging from six to thirteen fathoms.

Perforated EuUima.

Example, *Eulima splendida.* Shell acuminate-pyramidal, brownish, articulated with white and chestnut near the sutures; umbilical large; aperture angled anteriorly. Length 1½, breadth 0½ inches. Locality, the Island of Tahiti. The largest specimen was found in coral sand on the reefs.

**Fossil EuUima.**

Mr. G. B. Sowerby says that the fossil species are found in the *calcareous breccias* near Paris.

**EUMENES.** [Blanckenhofa, vol. v., p. 343.]

**EUMYENE.** [Medusa.]

**EU’MEDONUS,** a genus of brachyurus crustaceans, the first of the *Parthenopaeides* of M. Milne Edwards, and which, in his opinion, establish in some sort the passage between the *Stenomychi,* *Acherontia,* on the one side, and *Euryome,* *Lambrus,* and *Parthenope,* on the other. The form of the carapace is nearly pentagonal as in the latter, but it is, at the same time, thrown forwards, as it were, and scarcely overpasses the line of the feet of the hind pair of limbs, a disposition which recalls the construction of the former. The body is depressed; the rostrum, which is very large and projecting, is only divided towards its extremity; the eyes are very short, and their peduncle entirely fills the orbits, which are circular; a character which again approximates these crustaceans to the *Stenorynchi,* the internal antennae are folded back very obliquely outwards, and the external antennae are but little developed. The *epistome* is shorter than in the majority of the *Ozyrhynchi.* The external jaw-feet present nothing remarkable. In the male the thoracic feet of the first pair are large and much longer than the rest: all these are a little compressed, and their third joint is surmounted by a crest, which is not distinctly perceptible on the other joints; the feet of the second pair are rather shorter than those of the third and fifth pair, which are nearly as long as the fourth. The abdomen of the male is composed of seven articulations.

Example, *Bumelonus niger.* This small species, the only one known, is of a brownish black colour, and inhabits the coasts of China. [Patterson.]

**EUMENES,** of Carthia, a town in the Thracian Chersones, was an important actor in the troubled times which followed the death of Alexander the Great. [LEXANDER III.; ANTIPATER; ARNISMUS; PHRUSCAS.] Being early taken into the service of Philip of Macedon, he served him for seven, and Alexander for thirteen years, in the confidential office of secretary. He also displayed great talent for military affairs through the Persian campaigns, and was one of Alexander’s favourite and most esteemed officers. After Alexander’s death, in the general division of his conquests, Cappadocia, Paphlagonia, and the coast of the Euxine as far east as Trapesh, fell to Eumenes’ share. This was an expectation rather than a provision, for the Macedonian army had passed south of these countries in the march to Persia, and as yet they were unsubdued. Perdiccas, however, took arms to establish Eumenes in his new government, and did so, at the expense of a single battle. To Perdiccas as regent, and after his death to the royal family of Macedonia. Eumenes was a faithful and upright officer; indeed he is the only one of Alexander’s officers in whose conduct any appearance of gratitude or disinterestedness can be traced. When war broke out between Ptolemy and Perdiccas, A.D. 321, he was appointed by the latter to the command in Asia Minor between Mount Hellespont and the Hellespont (Cor. Nep., c. 3), to resist the expected invasion of Antipater and Creatus. The latter he defeated; but the death of Perdiccas in Egypt threw the balance of power into Antipater’s hands, who made a new army in the provinces, in which Eumenes was omitted, and Cappadocia given to another. The task of reducing him was assigned to Antigonus, A.D. about 320. The rest of his life was spent in open hostility or doubtful alliance with Antigonus, by whom he was put to death, A.D. 315, a fate which, however, the reader may consult also Droysen, *Geschichte der Nachfolger Alexander.*

**BUME’NIDES** (the kind goddesses), a name given to the Erinies or Furies, a set of goddesses whose business it was to avenge murder upon earth. They were also called Semnos, or ‘venerable goddesses.’ The name Erinys was derived from the old Arcadian word *erines* (pious), to be angry. (Pausan. viii., 25, 6.) These goddesses appear in the play of *Aeschylus* which bears their name, not only as the instruments of wrath and the plotters for justice against the wronged, but also as the bringers of prosperity, health, and all sorts of blessings to the Athenian people. This mixture of characters is to be explained by the fact that their worship was connected with that of a Demeter Erinys at Thelps, in Arcadia, and we have seen elsewhere how the goddesses of the earth and its productions was also the goddess of the nether world. [BACCHUS; DEMETER.]

The site of their temple at Athens, where their worship possessed a peculiar importance, was the north-east angle of the Areopagus, at its base. There is a wide long chasm there formed, by split rocks, through which we enter a gloomy recess. Here is a fountain of very dark water.
was at this period the all-absorbing subject of ecclesiastical controversy. The Trinitarians contended for the Athenian or Homousian doctrine (from Αθηναῖος, of the same city), against Constantius, who also held the Homousian doctrine (from Αθηναῖος, of the same city), and against the doctrine of the Anomolians (from ἀνόμος, of a different essence). In defence of the last theory, or that of unmodified Arianism, Eunomius exerted a high degree of intellectual brilliancy. He did not dispute the impossibility of two principles in a simple substance, one of which is general to the other, and exhibits the relation of a son to his father. The divine essence, he said, is necessarily characterized by cleverness and insubordination; the persons of the Godhead, like the species of men, are distinguished by different names, and merely the names of ideal distinctions of the one Supreme Essence, as considered in its different relations with exterior objects, and it is contradiction and manifest absurdity to suppose this simple essence to consist of a plurality of principles or substances in harmony with the nature of God. (St. Basil, Epist. 156; St. Chrysostom, De Incomprehensiibilibus Dei Natura.) Eunomius still acknowledged a father, son, and holy spirit, but the father as supreme, eternal, and distinct; the son as generated from the father; and the holy spirit as generated from the son.

In the ceremony of baptism he dipped only the head and shoulders, regarding the lower parts of the body as disreputable. Gronovius, after them, found that a special form of baptism, in which the catechumens, after preparation, were immersed in water by the priest, is said he taught that those who faithfully adhered to his own theory of Christian doctrine might commit any degree of sin without incurring the danger of perdition; but this is probably a misrepresentation by his opponents, who also state that he caused the name of Dapsus to be the third joint of the antenna is not longer than any of the others. Many of the species of Dapsus are indigenous in Europe, living in different fungi, whence the name of the family (Fungicola). Some of these insects are also found under the bark of the birch, the Eucalpytus, and in the old trees in general. Dapsus is the third joint of the antenna being lateral, larger than the others, and forming a triangular club-shaped mass. 3d Sub-genus, Lycoperdina (Latr.) has the maxillary palpi filiform, and the last joints of the labia are enlarged. (TRUMER, Eunomius.)

EUNAPIUS, one of those writers known by the name of Byzantine historians, was born at Sardeis, in Lydia, A.D. 347. He began his studies under the care of Chrisanthius the Sophist, by whose advice he is said to have composed the first volume of his works in Greek. At the age of twenty he left Asia for Athens to attend the lectures of Proclus, by whom he appears to have been subsequently treated with the utmost kindness. On his voyage he met with a shipwreck of a very violent kind, which yielded only to the care of the rough sea, and he was spending Proclus. He therefore mortified himself when committed to the church, and distinguished himself by a vehement antipathy to Christianity, produced, as is probable, by its growing corruptions.

Besides his biographical works, he wrote a continuation of Dionysius's history, in the reign of Claudianus Magnus (494-510), where he quoted it, to the year 464 A.D. It is violently in favour of the old creed, and, in the opinion of Hadrian of Nicomedia, shared the peculiarity of style which distinguishes the Sophists. All that remains of his historical works is contained in the recent edition of the 15, 12, and 8.
of Origen, not only to castrate those of their own persuasion, but all whom they could lay hands on. They were also called Vale-ians, from Valerius, an Arab, who was their chief. (See Epiphanus and Baratius' Chronicles, under the years 249 and 260.)

EUROMPHALUS. [Trocchide.] EUROMPHALUS. [Trocchide.]

EUPATORIA. [Chimaera.] EUPATORIA. [Chimaera.]

EUPATORIACEAE. one of the tribes of composite plants. It is fitted by De Candolle, who defines it thus:—

"Style of the hermaphrodite flowers cylindrical; the arms long, somewhat clavate, covered externally with downy papillae at the upper end. The stigmatic series but little prominent, and usually disappearing before they reach the middle of the arms of the style." Under this character are arranged 32 genera, the most extensive of which is the genus Eupatorium, including no fewer than 294 species.

EUPEN, EUPHAN, EUPHHEU. Peratoria, a circle in the Prussian administrative circle of Aachen, or Aix-la-Chapelle, and in the western part of the province of the Lower Rhine, is, though wooded and mountainous, full of fine pastures. It contains about 76 square miles. It produces timber, grain, vegetables, flax, &c., and large quantities of cheese are made. There are considerable manufactures, iron, calamine, and potters' clay, are among its mineral products. The population in 1816 was 17,419; in 1831, 19,058; and is now about 19,500.

EUPEN, the chief town (the Nœm of the former de-

parth of the Ourthe), is situated in a fertile valley on the banks of the Wesze, in 50° 39' N. lat. and 6° 1' E. long. It is well built, and with its gardens and meadows covers a considerable surface. It has four churches and chapels, an orphan asylum, and a good school, and contains nearly 12,000 houses. The number of inhabitants was 895 in 1816; 10,534 in 1831; and is at present about 11,300. There are large manufactories of kerseymere and fine woollens. The other productions are woolen yarn, soap, chesire, powder, seals, blotting paper, &c. It is a place of extensive trade, and has several manufacturing villages in the neighbourhood.

EUPHEUS. [Isopera.] EUPHEUS. [Isopera.]

EUPHOR'BA, a genus of exogenous plants, giving its name to an extensive and important natural order. It has very small monandrous naked male flowers, crowded round an equally naked female one, in the inside of an involucre looking like a calyx and formerly mistaken for that organ. The species have either a common leafy appearance, with the involucres proceeding from among large foliaceous bracts, or they are nearly leafless, with their stem extensively succulent, so as to resemble Cacti. Those with the former character are natives of most parts of the world, and are the only kinds found in Europe; the succulent species chiefly appear in the hottest and drier countries. Handsomely cultivated plants in the plains of Hindostan and the arid regions of Asia and the north of Africa are their favourite stations; in the Canaries, on volcanic soil, E. Canariensis and Iphylïa form great bushes with arms like candelabras. From Cari, which some of these plants much resemble, they are readily known by their spines, when they have any, not growing in clusters, and by their emit-

ting, when punctured, an abundant discharge of milky juice. This, in a concrete state, forms what is called the gum-resin, or rather resin, called Euphorbia, an acrid, corrosive, most dangerous drug, principally furnished by E. officinarum, antiquorum, and E. Canariensis. The same properties exist in the herbaceous leafy species, distilled in some, concentrated in others.

E. Lathyris, a common weed in cottage gardens, where it is called 'spurer,' yields from its seeds an oil of the most violent purgative nature. If it were less dangerous it might be substituted for Tiglium oil. Fée states that with as much of this oil as could be sold for a fair number adults might be purged.

A few species, having the involucre of some showy colour, are cultivated as objects of ornament; otherwise they are looked upon as mere weeds.

EUPHOR'BIACEAE. a natural order of exogenous plants, with unsexual flowers and treecose fruit. Their real affinity is a matter of great uncertainty. Jussieu placed them among his Diclinous Dioscydons, and probably he was right in so doing: nevertheless there are many strong marks of resemblance between them and Malvaceae, Celastraceae, and even Elagiacceae plants. The number of Euphorbiaceae is unknown, but certainly very considerable. They vary from trees of the largest size to minute herbs, of only a few weeks' duration, and from having both calyx and corolla highly developed to the total absence of those organs. In fact they are constant in scarcely anything except the short character we at first assigned them, and in their sensible properties. Acridity, a violent corrosive property, which sometimes is so concentrated as torender them most dangerous poisons, and sometimes so diffused as to be of little importance, with all imaginable intermediate qualities, exists throughout the order. Hence some are fatal, others drastic or purgative, and some simply laxative. They also occasionally secrete a farinaceous substance which, being separated from the poison, is valuable for the food of swine, as in the Co-asa.

Among the more dangerous species of this order is the Manchineel, whose very shade is asserted to be dangerous, the Excoecaria, which derives its ominous name from its juice producing blindness; and the Euphorbias, that yield Euphorbiolum, Castor oil, and oil of Tiglium, well known valuable purgative medicines. Among other products may be named Co-carrilla, the bark of a Croton, Tumide, afforded by a Crotophor, Chonchou, the produce of Siphimia clausa, Hum crenatns, and others, and a kind of bird-lime yielded by Sacopana aurepanum.

EUPHOR'BIUM, improperly called a gum, or gum-resin, since it is entirely destitute of any gum in its composition, is the concrete juice of several species of euphorbias, either exuding naturally or from incisions made in the bark. Much of the article found in British commerce is obtained from the Euphorbia Canariensis, while that which occurs on the continent is obtained from Euphorbia officinarum (Linn.) and E. antiquorum (Linn.), and other African species, particularly from an undescribed species, called by the Arabs dergnato. The branches of this plant are used in tanning, and to it, according to Mr. Jackson (Edinburgh
Kupolis published his first play when he was only seventeen years old (Sudias).

EURE, a river in France, which rises in the marshes and pools which occupy the eastern extremity of the department of Orne, near the town of Longueville. Seven or eight miles from its source it enters the department of Eure et Loir, through which it flows in a south-east direction for about 25 miles without receiving any considerable accession. It then turns northward, and flows in that direction for about six miles through the departments of Eure and Eure et Loir, and past the towns of Chartres, Macon, Anet, Irvy, Pacy, and Louviers, into the Seine, which it joins just above Pont de l'Arche; receiving in succession the rivers Vole on the right bank; the Blaise, which waters the Manche; the Aube, which enters at the Veugre, from Houdan, on the right; and the Iton, which passes Damville and Evreux, on the left. Its whole course is nearly 120 miles. It is navigable from Pacy, about 27 miles above its junction with the Seine, or, according to certain authorities, as far as Houdan, near the department of Calvados. Above 20 miles higher up; but the navigation is liable to frequent obstructions. It is chiefly used for the conveyance of salt, and of wood for building and fuel for the supply of Rouen. The Eure never freezes in winter.

EURE, a department in the north of France, comprising a portion of the ancient Normandie. It is bounded on the north by the department of Seine Inférieure, from which it is partly separated by the Seine; on the east by the departments of Eure et Loir, from both of which it is in part separated by the river Kupolis, a. s. a. the Seine; on the south by the department of Eure et Loir, from which it is partly separated by the rivers Eure and Arve, or, Aure, the latter a feeder of the Eure; on the south-west by the department of Orne, and on the west by that of Calvados. The form of the department is very irregular; its greatest length is from north-east to the Epte, near Mainville, to south-west, near Monny, on the road from Rouen to Alençon, 65 miles, and its greatest breadth from right angles to the length from Fiquefleur, on the Seine, to St. George's, at the junction of the Arve with the Eure, 65 miles. The area of the department is 259 square leagues, or 227 square miles, rather more than the joint area of the English counties of Cumberland and Westmoreland, and about the size of the county of the same name of the Old Testament. Its population in 1832 was 424,248, or nearly 185 to a square mile, being considerably greater than both the relative and absolute population of the average of the French departments; and very far exceeding that of the two English counties above mentioned, whose population amounts to 168,888, or nearly 200 to a square mile. It is bounded on the south by the departments of Eure and the department of Calvados. The Seine crosses the eastern side of the department in a north-western direction past Vernon, Petit Andely, and Pont de l'Arche, and flows for a short distance along the boundary. In its sinuous course below Rouen it again meets the eastern bound of the department three times, separating it from that of Seine Inférieure: its course within the department is about 40 miles, and along the border 27 miles; for all which it is navigable. The Eure crosses the department of Orne, and its width of its course is upon and 36 miles within the border, for 25 of which, or according to some, for the whole of which it is navigable. [Eure river.] The Arve, or Aure, has nearly 36 miles of its short course within or upon the border of the department by north and south; and at the mouth of its source it runs across the border of the department at St. George's; it passes Châlons-en-Champagne, Venden, and Nonancourt. The Iton rises in the department of Orne, and crosses this department in a winding channel in a north-eastern direction; its length is 60 to 70 miles; nearly the whole of its course in the department; it passes Bourre, Breteuil, Damville, and Evreux. The Rille rises in the department of Orne, and crosses that of Eure in a northward direction till it falls into the Seine between Quillebeuf and Honfleur. It passes the towns of L'Aigle, in the department of Orne; and of Rogues, Neuve-

Medical and Surgical Journal, vi. p. 457), the morocco-leather owes its peculiarity. By the most recent chemical analyses, euphorbiuni seems to consist of resin, wax, and saline matter (mostly malates). The resin is the active principle, and differs in some respects from most other resins.

Euphorbiuni is a powerful acid substance, causing irritation and inflammation of the parts with which it comes in contact, and by sympathy affecting the nervous system. It causes in the skin a sensation of heat and smarting, and in the eyes, so that it is necessary for those who grind this drug to protect the face by masks. Delirium and stupor appear from the intense sweating and purging; in larger doses it produces inflammation of the stomach, and sometimes proves fatal. It is now little used, even as an external application to produce vesication or ulceration, except by veterinary surgeons. It is sometimes used as an enema, largely diluted with starch, and enters into the composition of some cephalic and eye-salves; but it is apt to be violent in its effects. In case of poisoning by it, demulcent or oily fluids should be given, and venesection employed if much inflammation ensues.

EUPHRATES. Trogis.] As new information may be expected upon the subject of the Euphrates, we may treated to determine of this double river system under the head of Trogis.

A liquid obtained by Reschbach, from animal tar, especially that of bones or horns. The process for procuring it is opere and complicated. Its properties are— that it is very limpid, colourless, and tasteless; it boils at about 340° Fahr., and distills unchanged; it is not dissolved in water, alcohol, oil of almonds and of olive, oil of turpentine, naphtha, &c.; it dissolves chloride and bromine, which are cooled when it is heated, and it also takes up camphor, seirin, and naphthalin, at common temperatures, but when heated, in larger quantity, with iodine it forms a blue solution; it dissolves phosphorus, sulphur, and selenium, when heated, but the greater portion is deposited on cooling; caustichoc swells in it, and when heated dissolves. It is not altered either by exposure to air, or by acids or alkalis. 1 lb. makes 1 gill.

EUPOLIS, a writer of the old comedy, was born at Athens about the year 446 b.c. (Clintom's Fusti Helenicic, ii. p. 63), and was therefore a contemporary of Aristophanes, who was in all probability born a year or two after. The few fragments of the works of Eupolis, which are preserved, are but little above the ideal of obscurity. It was generally said that he was thrown overboard by the orders of Alcibiades, when that general was on his way to Sicily in 415 b.c., because Eupolis had ridiculed him in one of his comedies; but this story, which is sufficiently ridiculous in itself, is still more ridiculous when compared with the life of Gulesines, who brought forward some comedies which he had written subsequently to that period (Ciceron ad Attic, vi. 1); besides, his tomb was, according to Pausanias (ii. 7, 3), on the banks of the Asopus, in the territory of the Sicyonians. Another account states that he fell in a sea-fight in the Hellespont, and that he was buried in Aigina. We have the names of twenty-four of his plays, but no adequate specimens of them. To judge from the titles, the object of Eupolis must have been, in almost every case, mere perjury, for the most part from the comic author, who was an attack upon Hyperbolus, the demagogue; the Autorkuc (420 b.c.) was intended to ridicule a handsome pan-crastmat of that name, who is the hero of Xenophon's Symposion; and the Lacedemonian was directed against the political opinions of Cimon, who was too much attached to that people, and had even called his son Lacedamonius (Thucyd. i. 45). From the concurrent testimony of Lucian (Ado. Indicem, § 247), of Plutarch, and of the scholar on Juvnet, it appears, that Eupolis also contributed a poem in verse, which was written by Bion, and was intended to ridicule Alcibiades for taking part in the obscene rites of Cytoyo, and that it was for this attack that Kupolis was thrown into the sea. (See Butt- man's Essay on the Catothia and the Bopyms, Mythologiae p. 139, &c.) Aristophanes and Kupolis were not upon great terms. Aristophanes was very harshly of his brother poet in The Clouds (551, &c.), and charges him with having pillaged from The Knights the materials for his Marucis; and Eupolis in his turn made jokes on the haidness of the great comedian (Schol. on The Clouds, 533).
The manufactures of the department are various and important: Dapin (Forces Producteurs et Commerciaux de la France, Paris, 1827), states the number of establishments in 1827 was 173, and the value of the articles produced at 25,772,297 francs, or 1,000,000.

The workmen are thus classified by Malle: Bruni: in the woollen manufacture 8,500; in the iron and copper works 6,000; in the tape manufacture 5,600; in the manufacture of harness 5,100; in the manufacture of glass, paper, and hosiery 2,000.

The population is not however collected into large towns, there being no town with 10,000 inhabitants, and only five which have 5,000; and taking the whole department, the rural population is 73 per cent., and the town population 27 per cent. Here are many iron-works, and at Romilly on the Andelle are some of the most extensive and important copper-works in France; nails and pins are made at Ruisg on the Rille, cords for carding wool and cotton, and machinery at Louviers, (department of Seine) through Louisq, (department of Yonne), and the manufacture of linens is widely extended; the linens of Bernay are much esteemed. The woollen cloths of Louviers are among the best in France: other cloths of inferior quality, draperys and damasks, are made in different places in the department. Leather of excellent quality is made at Pont Audemer, and there are yarn-yards at Evreux and other places. Tapes are made at the town and in the arrondissements of Bernay, bed-ticks at Evreux, and printed calicoes and other cotton goods in various places: cotton and woolen manufactures are also practised.

The navigation of the Seine enables the department to communicate readily with Rouen and Paris: a cut in one part shortens the navigation a little; the Eure is navigable for a considerable part, if not the whole of its course by this department: the Iton is useful for floating during part of its course; but the Rille is no longer used for that purpose. It is navigable however up to Pont Audemer.

The number of navigable rivers and canals is as follows:---

The department is also better provided with roads than the greater part of France: the road from Paris to Caen and Cherbourg crosses it from east to west through Pacy and Evreux; that from Pont de l’Arche to Rome and Orleans, is the principal through route; the road from Paris to Rouen is the same as to Onez; and that from Paris to Rouen by Vernon, Galign, and Pont de l’Arche, along the valley of the Seine, cross it from south-east to north-west. Roads from Rouen to Honfleur (department of Calvados) by Pont Audemer; to Alençon (department of Orne) through Bould of Bossu, Louviers, Bernay, and Chambois; and to Evreux through Pont de l’Arche and Louviers; and from Evreux by Vernon to Gisors, also cross it in different directions. The road from Paris to Dieppe just passes through Gisors in the eastern extremity of the department, and that from Paris to Alençon, Laval, Rennes, St. Brieuc, and Brest, crosses the department just within the southern boundary following the valley of the Aire or Arve through Nonantoue, Tillières and Vernon. A road from Rouen to Beauvais just touches the north-east extremity of the department. The other roads are by-road.

The department is divided into five arrondissements: that of Les Andelys, in the east and north-east; that of Pont Audemer, in the north-west; that of Bernay, in the south; that of Evreux, in the south-west; and that of Louviers, in the north central. The population is thus distributed among them:---

Les Andelys, 61,337; Pont Audemer, 89,744; Bernay, 82,289; Evreux, 118,397; and Louviers 65,942.

The number of counties or districts under the jurisdiction of a justice of the peace is 10 in the west central, 12 in the north east, and 13 in the south west.

The principal towns are Evreux, the capital, on the Iton, population 7,988 for the town, 9,963 for the whole commune; Louviers, on the Eure, population 8,627 for the town, 9,855 for the whole commune; Pont Audemer, on the Rille, population 5,305; Bernay, on the Charentonne, population 4,372.

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The population is from the returns of January 1, 1832.

The first scene of the siege of Henry V. of England and his rebellious Norman barons: the victory was gained by the king, to whom the fortress immediately surrendered.

In the fourteenth century it was defended successfully by its lord, the count of Evreux, against the generals of the king of France: this was the first siege in which cannon were employed in that kingdom. It was afterwards taken by Duguesclin, its castle razed, and the walls and towers of the town destroyed.

It is a small nest place, at the foot of an eminence, with handsome streets and good brick houses.

Beuzeville has a population of above 2000: the inhabitants are engaged in tanning leather and sawing mable; they have some linseed-oil mills.

Conteville is near the mouth of the Rille. The 'Dictionnaire Universel de la France,' our latest authority (Paris, 1804), gives its population at 900.

Ormeilles is on the road between Pont Audemer and Lisieux. It had formerly a Benedictine abbey, founded by William Fitzosborne, a relation of William the Conqueror.

The church was once celebrated for the manufacture of cotton-yarn, but the fuses are planted with trees, and forms a promenade. Some portions of the antient town-wall yet remain. The church of Gisors is a large well-proportioned cross church, adorned with much elaborate sculpture; but its architecture is for the most part a jumble of various materials and periods. There are considerable remains of the castle at the extremity of the town towards Rouen, on the river Epte.

From its position and general outline, it much resembles the remains of Launcleston Castle in Cornwall. The inclosure of the castle is now used as a park. The fuses are planted with trees, and forms a promenade. Some portions of the antient town-wall yet remain. The church of Gisors is a large well-proportioned cross church, adorned with much elaborate sculpture; but its architecture is for the most part a jumble of various materials and periods. There are considerable remains of the castle at the extremity of the town towards Rouen, on the river Epte.

A school of instruction, a school for outline-drawing, and a school for the manufacture of cotton-yarn, are provided, and considerable advances have been made in cotton-yarn manufacture, the fuses are planted with trees, and forms a promenade. Some portions of the antient town-wall yet remain. The church of Gisors is a large well-proportioned cross church, adorned with much elaborate sculpture; but its architecture is for the most part a jumble of various materials and periods. There are considerable remains of the castle at the extremity of the town towards Rouen, on the river Epte.

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The wealthiest in Normandy, founded by Helouin, a noble of the country, about A.D. 1034. The abbey's patronage was very extensive. Soon after its foundation this abbey became the seat of a famous school, founded here by Lanfranc, one of the monks of the convent, afterwards archbishop of Canterbury.  And to Thibaudeau, and Hérouart, were subsequently raised to the same archiepiscopal see, and Roger, the seventh abbots, had the offer of that dignity, but refused it. The seces of Rochester, Beauvais, and Evreux, were filled by monks from this abbey, which furnished abbots to the convents of Chester, Clifton, and St. Edmund's Bury. The Empress Maude, daughter of Henry I. of England, is said to have been buried here. The abbey was fortified when Henry V. invaded France, and stood a siege of a month before it was surrendered to the English. The greatest part of the abbey church is a twelfth-century tower. The thirty feet high, a few ruined arches, and one of the side chapels, are the only parts of the church which remain. A part of the ground is appropriated to a stud for keeping up the breed of Norman horses. The town of Le Bec is unimportant; its population is about 700.

Brionne was, under the dukes of Normandy, a place of some importance; it had three churches, an abbey, and a larar house, beside an ancient castle, of which some slight remains exist, and it was the capital of an earlom, created in the twelfth century, and a son of one of the dukes of Normandy. The town is pleasant and advantageous situated on the banks of the Rillé. It has only one church now. The inhabitants may be estimated at about 900. A mill for spinning cotton yarn employs 120 hands, and a cloth factory 500'—rapes and linseed oils are expressed.

Beaumant-le-Roger, on the Rillé, had also a strong castle and a Benedictine priory. The inhabitants are given in the Dictionnaire Universel de la France, 1837: a cloth factory employs 400 hands, a glass-house 100; in other works, chiefly intended for Tournai, are blown in great quantity at the latter establishment.

La Barre and Beaumanié are between the Rillé and the Charentonne; their population (1200 according to the Dictionnaire Universel, 948 and 484 respectively). Chambray is on the Charentonne, above Bernay; and Thiberville, near the source of the Calonne; the inhabitants of the latter (population 1200 according to the Dictionnaire Universel) are occupied in weaving tapestry. This branch of industry employs at the neighbouring village of Drucourt and the surrounding communes, 4600 workmen.

Hence, not far from Brionne, gives title to an English nobleman; there are remains of an ancient castle, but the town is a market of about 3000; a cloth factory employs 250 workmen, and one of a silk manufacture employs 3600 more. Zinc and copper are rolled out into sheets: the manufacture of iron cables, once carried on in this town, has been revived here, in these works.

Conches (pop. in 1826 1725) is on the river Conches, a small stream which joins the Iton between Damville and Evreux. Nails, agricultural implements, and other iron goods, are manufactured here: there are tan-yards, paper, oil and tan mills, and trade is carried on here in cloth, cotton, hemp, linen, and hay, and cattle. The iron work of the bridges des Aras and d'Austerlitz at Paris were cast here.

Damville, Breteuil, and Bourth, are all on the Iton. Their population is given by Dulaure at 762, 2000, and 1376, respectively. Conches makes the best tape; Fins are made at Bourth; and at Breteuil, cannon of every calibre, splendid projectile of all kinds, screw tacks, crotgons, iron pots and other iron wares, tiles, and bricks. There are at Breteuil mineral springs, and the remains of a castle, built by William the Conqueror.

Chennebrun, or Chennebrun, is on the Aire: it is very small; its population is about 360.

Verneuil is on the Aire: it is well laid out with broad

straight streets, but wretched and ill-built houses of earth and wood, with a few only of brick: it had in 1832 a population of 3722 for the town, or 4178 for the whole commune.

The manufactures of this town and its vicinity consist of leather for bookbinders (but this branch of industry has declined), and cloth, but this is also languishing. There is a Gothic church in the town, the steeple of which is said to have been built by the English, and an old tower, the remains of a castle which formerly defended the town. This tower is popularly but erroneously ascribed to the Roman legionaries, but this has been laid out in promenades. The English obtained a victory over the French at Verneuil in the reign of Henry VI., A.D. 1424. There is a small library.

Tillicres and Nonanour are also on the Aire: they have a population of 350 and 160 respectively. At Tillicres pins and nails are made; and at Nonanour woollomber's cards, machinery, woollen and cotton yarn, woollen cloth, calicoes, hosiery, linen, and paper; trade is also carried on in corn and cattle.

Ivy, on the Eure, at the junction of the Vasgée, is celebrated for the battles fought in the adjacent plain, in which Henri IV. routed the army of the League under the duke of Mayenne, A.D. 1590. A pyramid, overthrown at the Revolution, but restored by Napoleon, commemorates the battle. It is the site of a tower of about 80 feet, and a relieving tower, which is in a fine state, and furnished with musical wind instruments, ivory and boxwood combs, cotton yarn, and leather, and carry on trade in corn, cattle, and horses.

Pacy is on the Eure, at the point where, according to some of our authorities, the navigations begin, in a fine situation. It was antiently a place of some importance, and was defended by a castle and strong ramparts. Before the Revolution it had three churches (one parochial church and two others) and a Benedictine abbey. The inhabitants, 1364 in the Middle Ages, were chiefly occupied in farming, and mentioned the manufacture of earthenware.

St. André, between the Eure and Iton, had a population of 977 (Dulaure): some trade in cattle is carried on. At Pacy en Desnevre, a short distance from the bank of the Eure, and on the east side of the town, there is a population of more than 400 (Dulaure); it has some trade in cattle and horses.

Vernon is on the left bank of the Seine, and on the road from Paris to Rouen. Here was in ancient times a castle, which William the Conqueror bestowed on his relation, Guy, son of the count of Bourgogne, and which was strengthened by Henry I., the Conqueror's son. The town is situated in a singularly beautiful valley, and is connected by a bridge of twenty-two arches with the suburb of Vernonnet, on the other bank of the Seine. Of the ancient defences of the town there remains only the tower, in which the archives of the place are preserved. The church, part of which exhibits some very early Norman architecture, was formerly collegiate; it contained before the Revolution several monasteries. The population in 1832 was 2703 for the town, or 4888 for the whole commune (of the suburb, Vernonnet). Cotton velvet, plain and printed calicoes, leather, and cattle, are manufactured: there is an establishment for making the equipment of the artillery, and another for sawing stone; also lime, gypsum, and tile kilns: trade is carried on in corn, flour, wine, wool, feathers, and cattle.

Vernonnet contains Pont de l'Arche, Gaillon, and Neufbourg.

Pont de l'Arche is on the left bank of the Seine, just below the junction of the Eure, and at the point where the river is rather difficult to be perceptible. It owes its origin to Charles le Chauve, who, having here convened councils, held assemblies of his nobles, and drew up edicts; and built a fine bridge, defended at one extremity by a citadel, from which the name of the place (in Latin Pons Arche) is derived, and which was demolished about the beginning of the eighteenth century. The town of l'Arche was burned by the English under Edward III. The walls of the town yet remain flanked by circular towers. The bridge is the lowest stone bridge down the Seine, and is in a very bad kind between Vernon and Rouen: it is a picturesque object, with much grandeur in its length, and a lock under one of the arches to facilitate the navigation of the river and render it secure. On the bank of the river near the town are the remains of a Cisterian abbey, founded, A.D. 1100, by Richard Coeur de Lion, in pursuance, it is said, of a vow which he made when nearly lost in the rapid current of the Seine. The church of Pout
de l'Arche, though much dilapidated, is a fine building in the decorated style of Gothic architecture: it has some remains of its ancient fine windows. Restoration is given by Dulaure at 1489: the inhabitants manufacture woollen cloth, and trade in cattle, horses, and fruit-trees.

Gallion is near the bank of the Seine, between Beauvais and Vernon. This town was founded by St. Louis on the archbishop of Rouen, whose successors held a palace here up to the period of the Revolution, and enjoyed the sole right of trying civil and criminal cases. This palace, destroyed in the wars of the English, rose a splendid century after by the archbishop, George d'Amboise, and embellished by his successors: after being nearly destroyed during the Revolution it has been repaired and fitted up as a prison, and contains now 1400 prisoners who are employed in making canvas and manufactures. On Montfaucon, a plain near the new Carmelite convent here before the Revolution, founded by one of the archbishops of Rouen. A fountain in the town has the property of mercurising with its deposits any object thrown into it. Gallion is a poor place: its population is given by Dulaure at 1096. The inhabitants carry on trade in cattle and woven goods. Near Gallion are vineyards, the most northern in Normandy: the grape grown is the small black cluster; the wine produced is of very inferior quality.

Neubourg or Neubourg, between Louviers and Beauvais, is about 10 miles, and occupies the site of the eldest son of Henry II. of England espoused Marguerite daughter of Louis VII. (Le Jeune) of France. The inhabitants, whom Dulaure gives at 1675, manufacture linens and calicoes, dimities, fusians, &c., and carry on trade in cattle and woven goods.

The department constitutes the diocese of Yvrex, the bishop of which is a suffragan of the archbishop of Rouen: it is in the jurisdiction of the Cour Royale of Rouen, and in the circuit of the Académie; or council of education of the clergy, which is the superior authority of which the diocese is the head-quarters. It sends seven members to the Chamber of Deputies. Education is more attended to than in the average of the French departments: it furnishes one male scholar for every twenty-four inhabitants. This department is distinguished, viz., for the great breadth of its territory, in Normandy, Le Roumois, La Campagne, Ouche, Lieuvain, all in Haute or Upper Normandy.

EURE ET LOIR, a department in France, occupying a portion of the country between the Seine and the Loire. It is bounded on the north by the department of Eure, on the east by that of Seine et Oise, on the south-east by that of Loirêt: on the south by that of Loir et Cher; on the south-west, for a short distance, by that of Sarthe; and on the west by that of Orne. Its only natural boundary is on the north, west, and south, where the Loire, the Seine, and the rivers Arve (or Aare) and Euro, and for a very little way on the north-east. Its greatest length is from north by east, near Villiers in Deauville (department of Eure) to south by west near Clécy on the Loire, 58 miles, and its greatest breadth, at right angles to the length, is from near Nogent le Rotrou to the neighbourhood of Thory, 55 miles. It is between 47° 37' and 48° 56' N. lat., and between 0° 45' and 1° 55' E. long. The area of the department is 384 square geographical leagues (French measure) of 25 to the league, and contains about 2,400,000 acres; but net much below the average area of the French departments, and a very little more than that of the two English counties, Kent and Surrey, taken together. The population in 1832 was 378,890, or 190 to a square mile, about three-fourths of the average proportion of fertile and labourable, in the French departments, and not so much as three-tenths of that of the two English counties. Chartres is the capital.

There are no lofty hills in the department, but the general level of the country is high; the western part is varied with hills and vallies, the hills being a prolongation of those which overspread Bretagne and Upper Normandy, and which enter this department from the north-west; in the south-eastern side of the department these hills expand into the upper valley of the Eure, which is a deep water, though just between two of the largest rivers of France, the Loire and the Seine. This table-land extends on the south-west into the adjacent department of Loirêt. The hills divide the department into the basins of the two rivers from which it takes its name; that of the Eure occupying the northern part, and that of the Loir the southern.

The Eure enters the department not far from its source, and flows through it, or along the border, about 70 miles, first in a south-eastern direction past Bellhomont, Pontgouin, and Courville, and then in a northward direction past Chartres, Maintenon, and Nogent le Rotrou. [Eure River] In its course to the south it passes Febus (17 miles long), which rises near Auneau and flows into the Eure on its right bank below Maintenon, passing the towns of Guédelongroy and Gallardon; the Blaise (about 26 miles long), which rises near Benonches and flows into it for its south-western part, rising Maillot and Drève, and flowing in a channel continually divided and re-uniting; the Aure, which has been noticed elsewhere [Eure Department]; and the Vergy (32 miles long), which rises in the adjoining department of Seine et Oise, before the junction of the Senne and the Vilaine, and runs in a north-west direction through this department into the Eure at Ivry. The Mauvotte, or Mauvelette (14 miles long), rises near La Ferté Vidame and flows north-east past Bré de l'Arche to the Aure on Nancourt; and the Opolon, which is a feeder of the Vesvre, and belongs to the department of Seine et Oise, flows for a very short distance along the eastern boundary of the department.

The Loir rises on the south-west slope of the hills which divide the two basins, a short distance south of Courville, on the west of the canal from Bué to Mionnet, of which it receives the Thironne, and afterwards the Fourcad; it then flows south-east, and then south (12 miles) past Bonneville, near which it receives the Ozanne; all these join it on the right, or west bank. It then turns to the south-west, and flows in a little distance, and then by receiving by the way the Connie, on the left bank, and the Yere on the right. The whole course of the Loir is about 160 or 170 miles, for nearly 30 of which (viz., from Château du Loir) it is navigable; it falls into the Sarthe just before it receives the Loire from the left, and then, which belongs to the system of the Loire (La Loira, feminine), from which the Loir (Le Loir, masculine) is to be carefully distinguished, both as to itself and its orthography.

The Thironne (12 miles long), the Fourcad (15 miles long), and the Loire (328) all rise in a short dis- tance east or south-east of Nogent le Rotrou, and all flow east by south into the Loir. The Connie, or Connie (above 20 miles long), rises in the adjoining department of Loiret, near Paley, and flows west-north-west into the Loir, receiving the Connie Palus (12 miles long), which has all its course in the department, on its right bank. The Yere rises in the south-west corner of the department, and flows east-south-east 22 miles into the Loir.

The Huino, a feeder of the Seine, just passes Nogent le Rotrou on the left side of the department; and the Brave, which separates the departments of Sarthe and Loir at Cher, and joins the Loir much lower down, has its rise just within this department.

The canal from Montgouin to the aqueduct of Maintenon connects the upper part of the Eure at Pontgouin with the lower part of the same river at Maintenon. The canal is about 27 miles long. The aqueduct was originally designed to convey the waters of the Eure to Vernailles, but the design was given up; and the aqueduct, a vast pile, is fagging to continue. The étang, or pool, of Bois Ballu is supplied with water chiefly from a deep pit, from which, at certain periods, fishes of considerable size are ejected, which disappear a few days after.

The greater portion of this department is occupied by the chalk which encircles the Paris basin, or the strata most immediately connected with it: on the south-east a considerable tract is occupied by the various formations which cover the chalk. These are clay, and marl, and flint, and pebbles, and gravel, and sand, and clayey sand; and variously described in the Dictionnaire Géographique Universel, Paris, 1837:—The lands in this department are clayey, mixed with a small quantity of sand; there are also some calcareous soils mingled with clay and sand; others are clayey mingled with large flints (Mayenne gravel), sometimes of a deep red sand and flint. The marl, which is found almost every where, is used for the improvement of the land. In the arrondissement of Nogent le Rotrou the L2
western side of the department) there are many tracts of waste land scarcely capable of producing anything; the ashes of the heath and furze are used for manure. Two thirds of the department consist of the former territory of Beauce, or Beauce [Blainvill] which is a great agricultural district, corn, especially wheat, which yields a great proportion of flour, constitutes its principal riches of this part of the department: the harvests are very abundant, and their produce is chiefly destined for the supply of Paris. In the other part the harvest is not so great, and the oats and grasses are cultivated in every where: the turnips of Saussine, the melons of Nogent le Roi, and the onions of Chaunons are in high repute; few potatoes are grown; but in some parts rape, flax, hemp, dyers' weed (reseda luteola), and potatoes for the use of the manufacturers of hops grow spontaneously: the vine is cultivated in many places: the wine is of middling quality, and liable to turn sour in hot weather. There are few fruit-trees in the former district of Beauce, but many in the arrondissement of Nogent le Rotrou, especially apple-trees, which furnish rider for home consumption.

According to M. Dupin (Forces Productives, &c. de la France) the value of land and the aggregate rental of the department are above the average of France; the quantity of land does not exceed the average province, but the other departments as more than five to two; that of oats nearly as four to two; and that of potatoes, contrary to what is stated in the above extract, is more than eight to two. The forests (we quote again from the Dictionnaire Geographical) consist of corn, by an extent of 13,000 hectares (above 110,000 acres), and consist, in a great measure, of oaks and birches: all the woodland is on the western side of the department, except some round Dreux, in the northern part. The wood is not mentioned in the quantity of arabic, but it is of good quality. A considerable number of floured cattle of a small race are reared; but not a sufficient number of horses for the wants of the agricultural districts; those which are bred in the arrondissement of Nogent le Roi are reared for the light cavalry. There are many sheep, some of which yield a fine wool; pigs, fowls (which are sent in great quantity to Paris), and bees. Game is abundant; the rabbits are in repute, as well as the red partridges, plovers, lappets, and especially a species of the plover called guig, from which the Chartreux derive their reputation; pigeons are again increasing. The rivers abound with fish; the golden eel of the Loir, the crayfish of its afflent, the Congie, the trout of the Blaise, the Eure, and the Ilaine, are all highly esteemed. The number of the inhabitants, insufficient, is given by M. Dupin at 33,967, nearly 8000 above the average of the departments: the number of floured cattle is given by him at 58,643, more than 23,000 below the average: the quantity of wool grown is to the advantage of the department, as the manufacturers are in repute for the light cavalry. There are about 600 flour-mills; a great number of them are on the Eure, the Blaise, the Loire, and other streams. The cottages of the peasantry are, in some parts at least, of a most miserable character; they call to mind the tents of the Catechizants who occupied the country.

The only metal dug is iron; but the mines supply only a part of the ore for the different iron-works, and are becoming exhausted: good free-tone is quarried, and sandstone for pavement; there is much marl; peat for fuel is abundant; sand-hills, also potter's clay and clay-potter's finer kinds of earthware produced in the manufactories of Stères.

The manufactures are of small importance; they are chiefly in the arrondissement of Dreux, and in that of Chateauneuf; themanufacture of linens is generally distributed, but it is only in one place that it is carried on on a considerable scale; some cotton yarn is spun and some cotton goods are woven; woollen cloths, serge, and other light woolen stuffs, blankets, flannel, knit and woven hose, 12 and 14 carps, and common hats are made; there are a considerable number of tan-yards; a small quantity of earthware is made, and a little beet-root sugar.

The department is very ill provided with the means of water carriage; a small part of the course of the Eure, along the boundary of the department, is, according to some of our authorities, navigable. With roads it is better provided. The great road from Paris through Tours to the south-west of France crosses the department, passing through Beurnon, Maintenon, Chartres, Bonneval, Châteauneuf, and Gisors; the western road from Paris to Rennes and Brest just crosses the northern part through Dreux; these are the only roads of the first class. Of the second class are the Orléans road, passing just within the south-eastern boundary of the department, through Thonnay; and the road which, commencing off from the south-western road at Chartres, runs through Courville Champ-rond and Nogent le Rotrou in the direction of Le Mans, Angers, and Nantes. Roads of the third class are a road from Paris to Chartres through Guédelongny, roads from Paris to Chartres through Nogent le Rotrou, and from Châlon to Nogent le Rotrou, and from Chartres to Alençon, in the department of Orne, and to Orléans. The other roads are by-roads.

The department is divided into four arrondissements which are Chartres, in the east and centre, population 163,784; of that of Châteauneuf, in the south, population 99,758; and of Nogent le Rotrou, in the west, population 44,747. These arrondissements are subdivided into 24 cantons, or districts: the population of the department, therefore, is 382,803.

The chief towns are Chartres, the capital, on the Eure, population 15,576 for the town, and 14,479 for the whole commune [Chartres]; Châteauneuf, on the Loir, population 6461 [Châteauneuf]; Dreux, on the Blaise, population 24,200 [Dreux] and Nogent le Rotrou, on the Ilaine, population 5912 for the town, or 6825 for the whole commune. Of this last and the smaller towns an account is subjoined.

In the arrondissement of Chartres is the city of Bu, Nogent le Roi, Le Troumely, Châteauneuf, Doury, Semoisches, Mailhebœuf, Beziolles, and La Ferte Volance.

Bu (population 1519), Doury, Etronnos de Paris, Paris, (7628) was once a place of considerable strength; it has still the ruins of an ancient castle, of which one tower is in pretty good preservation. It was the capital of a county. Its markets are well attended.

Nogent le Roi (population 1506), Duleau, Etronnos de Paris, Paris, (7628) was once a place of considerable strength; it has still the ruins of an ancient castle, of which one tower is in pretty good preservation. It was the capital of a county. Its markets are well attended.

The inhabitants carry on trade in cattle. Nogent belonged to Philippe VI. de Velos, who died here A.D. 1329. It is probable that it derived from this prince its distinctive epithet of Le Roi; the name Ilaine, is derived from the river Ilaine, which, in its confluence with the Baume, one of the couriers of the cardinal de Richelieu, the castle of Nogent, built on a hill which commands the town on the western side, was an object of frequent contest in the times of feudal warfare and in the wars of the English in France; under their kings Henry III, and Louis XIV, it was garrisoned by Henri IV. in his war with the League, taken by the inhabitants of the neighbouring towns, who had embraced the party of the League, and to whom the garrison was an annoyance, and retaken by the royal forces. Le Troumely is very small; its population is under 200 (Duleau); it lies a little out of the road from Dreux to Chartres.

Châteauneuf (population 1529), Duleau, is in a fertile plain between the Blaise and the Ilaine; Le Roi; there was an antient castle Châteauneuf, a name which was corrupted into Thiner, and gave to the surrounding territory the name of Thineris; whence Châteauneuf is sometimes distinguished as Châteauneuf en Thineris. In the 15th century was retaken by the troops of the duke of Mayenne, who was garrisoned. It is now a small town, and is, according to Duleau, of little importance to the inhabitants who carry on trade in cattle.

Duleau is not far from Châteauneuf, with a population, according to Duleau, of 1967. Some of our authorities make this to be only a village.

Semoisches and Maillébœuf are on the Blaise; the former near its source, the latter lower down. At Semoisches (population 1911, Duleau) steam-engines and hydraulic machines are made, and there are iron-works. Trade is carried on in cattle and horses. At Mailhebœuf (1506) inhabi-
EURLAURE) woolen cloth and light woollen stuffs are made. Peat is dug in the neighbourhood.

Brezelies is on the Meurthe. Dulaure gives the population and trade.

At La Ferté-Vidame (population 808, Dulaure), in the north-western part of the department, trade is carried on in horses and cattle. Some of our authorities make this to be only a village.

Arrondissement of Chartres are Epernon, Mainthion, Gallardon, Guédelongroy, Auneau, Ouarville, Voves, Juvigny, Thoury, Ilaire or Illiers, Courville, and Pont-gouin.

Epernon is on the road from Paris to Chartres, is on a delightful situation on the slope and at the foot of a hill near the river loire and the island of Chartres. It is tolerably well built; it was formerly walled in on three sides; on the fourth side (the north) it was defended by a castle on the summit of the hill, of which some picturesque ruins still remain. The country round consists of fertile meadows, and has a good depth of water. The inhabitants (1442, Dulaure) manufacture leather: there are kilns for gypsum; and trade is carried on in flour, excellent pulse, horses, and cattle.

Maintenon is on the right bank of the Euro, at the junction of the Oene and the Ouse. It was erected into a town in 1683, in honour of the widow Scarron, wife of Louis XIV., better known in history by the name, which she took from this town, of Madame (or rather La Marquise de Maintenon). The Château de Maintenon was built by Jean Cottereau, father of the architect, and by his descendants to Madame de Maintenon: some portions of Cottereau's edifice may be observed in the present structure. The chapel of the château is scrupulously preserved: the tradition that Louis XIV. and Madame de Maintenon were married in this church at the marriage of 1687 to the town, for 2263 for the whole commune. The inhabitants make serges, and other light stuffs, and some of the fittings of weavers' looms. There are some marl-pits of considerable depth in the neighbourhood.

In the arrondissement of Châtillon are Sancenéville, Bonneval, Cloyes, and Bourgas.

To Sancenéville, which is, according to some of our authorities, a village, is assigned a population of no more than 886. La Ferté Villeneuve is still smaller.

Bonneval is on the road from Chartres to Tours, in a pleasant fertile valley on the left bank of the Loir, which here flows in several channels. It was formerly a place of some little importance, but is entirely in ruins. The inhabitants (1756, Dulaure) manufacture carpets, counterpanes, flannels, woollen stuffs, calicoes, and printed cottons; and spin cotton and woollen yarn. Trade is carried on in corn, flour, wool, and cattle; and there are some considerable tanneries. There is a considerable Druidical monument in the neighbourhood of the town.

Cloyes is also on the road from Chartres to Tours. And on the Loir: it is a place of very little trade, with a population of about 1600. (Vayse de Villiers.) Bourgas is on the Loir near the small town, of which the population in 1870 for the town, and 2663 for the whole commune. The inhabitants make serges, and other light stuffs, and some of the fittings of weavers' looms. There are some marl-pits of considerable depth in the neighbourhood.

In the arrondissement of Nogent le Rotrou, Author, Beaumont le Chétif, Champron, La Loupe or La Loupette, and Belhommet or Belhommet.

Nogent le Rotrou is on the road from Paris by Chartres to Le Mans, Angers, Nantes, and other places in the west of France, 23 miles from the Loir. It is on a pleasant valley, watered by the Huine, on the left bank of which the town stands. It is a long place in proportion to its size. There is a castle, a picturesque ruin, which commands the town, and possesses some interest as having been the residence of Sully. There are three hospitals, one of them founded by Sully, who, as well as his wife, was buried here; but the tombs were violated during the Revolution, and the remains dispersed. The town had in 1832 a population of 6823: the manufactures are druggists, serge and other light woollens, and cottons: there are several tan-yards, some tan-mills, and a dye-house. There is a public library, a high school, and an agricultural society.

Author is near the source of the Ouse: its inhabitants (1211, Dulaure) make serges, druggists, and other light woollens. Beaumont le Chétif (a village, according to some of our authorities) is between Bourgas and Nogent le Rotrou: its inhabitants (391, Dulaure) manufacture earthenware. Champron is a village, which has 1904 inhabitants (Dulaure), who trade in charcoal and wood. There are in the neighbourhood iron-mines, iron-works, and peat-pits. La Loupette and Belhommet are on the road from Dreux to Nogent: they are both small; Dulaure assigns to them a population of 1804 and 451 respectively. At La Loupette some business is done in horses, oxen, and sheep.

The department constitutes the diocese of Chartres, the bishop of which is a suffragan of the archbishop of Paris. It is comprehended in the jurisdiction of the Due Royal of Paris, and is in the diocese of Chartres. The population of the whole commune is in the proportion of one for every seventeen inhabitants.

This department consists of the former district of Chartain. In the province of Bourges or Besançon, and in the province of Orleans; of a portion of Orleans proper; of a considerable portion of the county of Perche, comprehended in the province of Maine; and of a small portion of the district Mantois, in the Isle of France.

EURIBIA (FRACASSOMARA). EURIPIDES of Athens is said to have been born at
Salamis in the year b.c. 480, on the day of the great victory obtained over the fleet of Xerxes. His father Mnesarchus and his mother Clio were among the refugees driven to Salamis by the progress of the invading army. They seem to have been Athenian citizens of the poorer class, as the death of the poet's mother was made by Aristophanes one standing subject of the ridicule which he so perseveringly heaped upon him. Philochorus, on the contrary, says that he was of noble birth; but still his parents might be poor. (Guizot, however, found means to deserve himself early and closely to the study of philosophy in the school of Anaxagoras, as well as to that of eloquence under Prodicus. While he was yet very young, the persecution and banishment of Anaxagoras appear to have deprived him from on lesson with the cultivated philosophy of Athens, and combined with the strong natural bent of his genius to direct his exertions chiefly to dramatic composition. He is said to have commenced writing at the age of eighteen; and in the course of a long life he composed not fewer than seventy-five tragedies, or, according to other authorities, ninety-two, which rivalled in the public approbation the contemporary productions of Sophocles; and notwithstanding the constant and bitter satirical attacks which, in the author's own time, they sustained from his relatives and creditors and rivals, and especially and intimately attached to the elder tragic school, they secured him for all succeeding ages a place beside its two great masters. When upwards of seventy years old, weary, it should seem, of the feverish excitement in which he must have been kept alive by the sacrifices demanded from him in the theatre, the turbulent applause that attended him at Athens, he accepted the invitation of Archelaus, king of Macedon, and went to live in honoured and tranquil retirement at his court. Here, however, a singular as well as tragic and wretched end awaited him. According to one corner of his life, in many other matters of antient biography, (there are discrepancies), he had spent three years in this retreat, when, walking one day in a solitary spot, he was met by some of the king's hounds, which, rushing furiously upon him, tore him to pieces so violently that he should have been made a spectacle of the generation. Gellius tells us that the Athenians sent to Macedon to ask for the body of Euripides, but that the Macedonians constantly refused it, in order that their own country might retain the honour of the magnificent tomb which they erected for him at Pella, and which, according to Ammianus Marcellinus, was sanctified by the thunder-stroke, as Plutarch informs us, it had been the case with that of Lycurgus. Thus Athens was obliged to content herself with engraving the name of Euripides upon an empty monument, which in the time of Petronius was taken as a subject of the Bacchae of Phadæus,—Schlegel has well remarked, it merits the highest commendation for the strict observance of moral propriety in a subject of so critical a nature. After the Hippolytus the same eminent critic is disposed to assign the next place among the tragedies of Euripides to the Bacchae, on account of its harmonious unity, its well-subdued tragedy, and of the appropriateness to the very peculiar subject, and its treatment of that luxuriance of ornament which Euripides constantly displays. This piece also merits especial notice as being the only one remaining of the serious dramas that were composed expressly and immediately in honour of Bacchus himself, the patron deity of the theatre. This instance the glory and the power of Bacchus are in merely the occasion,—they form the subject of the tragedy, and the whole body of the poems, as Scipio observes, 'represent the infectious and tumultuous inspiration of the worship of Bacchus with great sexual power and vividerine of conception.'

An interest yet more peculiar attaches to the 'Cyrus' as the last tragic master of the species of the satyrical tragedy so called from the chorus of satyrs, which formed an essential part of its composition. This, therefore, seems to be the finest place in which to give a brief account of its particular and somewhat remarkable dramatic character. From this piece itself and from the collateral evidence, it does appear to be inferred that the satyrical drama was never better or more skilfully attempted than in the 'Cyrus' of Euripides, seven or eight of Sophocles, and five of Euripides besides a number of others by various minor authors. No witnessing its burlesque ingredients, the tragic character was so far preserved in the satyr-play, that the subje appears to have been always historical, and the plot serious, though with a fortunate catastrophe. Nor less than the tragedy was the dramatic and its peculiar an appropriate stage decorations, representing woods, caves, mountains, and other diversities of the sylvan landscape; Satyrs old and young, with Silenus in his cap were distinguished from one another by the variety of the grotesque masks, crowned with long shaggy goats' hair, while the satyrs were, negligently clad in skins of beasts, and the Silen decorated with garlands of flowers skilful.
woven. The satyr parts too appear to have been sometimes acted by pantomimic performers moving on a kind of stilts, to give them the air of satyrs.

The choral dance, it is hardly necessary to remark, was thoroughly rustic, peculiarly lively, and quite opposite in character to the solemn and impressive movements which accompanied the serious tragedy. The piece of Euripides has for a long time been in use, especially with Polybian actors, as related in the 'Odyssey', with the addition of Silexus and his satyr band, but the characters are accurately discriminated and consistently maintained; and the nature of the plot produces such natural contrasts and even blendings of the ludicrous with the horrible, as, above all things else, render this drama unique among the Greek remains.

The editions of Euripides are numerous. The first edition, that of J. Laskaris, Florence, near the close of the fifteenth century, contains only the Medea, Hippolytus, Alcestis, and Andromache. That of Ablus, Venice, 1562, contains seventeen plays, among which is the Cyclops. Among subsequent editions are those by Canter, Antwerp, 1571; Barnes, Cambridge, 1694; Musgrave, Oxford, 1778; Beck, Leipzig, 1778-1783. The last complete editions are by A. Mauhli, Leipzig, 1813, and by F. H. Botho, Leipzig, 1825. The editions of separate plays are also numerous; among which that of the Hecuba, Orestes, Phoenissae, and Medea, by Porson, is the best known. Euripides has been translated into German by F. H. Botho, and into English by Pope. The English translations in German of several of the separate plays.

EUROPE is one of the great divisions of the globe, forming the north-western part of the old continent, of which it occupies but a limited portion. Asia runs nearly nine-seventeenths, and Africa somewhat more than six. The surface of Europe is calculated to contain about 3,900,000 square miles, if Mount Caucasus and the river Ural are considered as forming the boundary-line between Asia and Europe. The name 'Europe' first occurs in a poem attributed to Homer. Herodotus says he does not know how the name came to be given to our continent, except that it be from Europa, the daughter of the king of Tyre; but he seems hardly satisfied with this answer, and adds an essay into the subject of the name of the continent. He says that in the time of Herodotus (450 before Christ), not only the coast-line on each side of the Mediterranean Sea and the northern shores of the Black Sea were well known to the Greeks, but that, following the track of the Phoenicians, they ventured to sail beyond the Caucasus, and to visit the islands of Cassiterides, or Tin Islands, by which name the south-western part of England must be understood. It is even reported that some of their navigators sailed through the English Channel and entered the North Sea, and perhaps even the Baltic. It must be remembered that the time of Herodotus professes himself totally unacquainted with the islands called Cassiterides (iii. 115); and Strabo (104. &c.) expresses a very unfavourable opinion of the alleged northern voyages of Pytheas.

Thus a considerable part of the coasts of Europe was discovered, whilst the interior remained almost unknown. When the Romans began their conquests, this deficiency was partly filled up. The conquest of Italy was followed by that of Spain and the southern parts of France, and not long afterwards Sicily, Greece, and Africa were added. Caesar conquered Gallia and the countries west of the river Rhine, together with the districts lying between the different arms by which that river enters the sea. His two expeditions into Britain made known also some parts of Ireland. After the time of these campaigns, the western parts of the British Islands became known. The course of little more than 200 years the interior of all those countries was discovered whose shores alone had been previously known. In the mean time nothing was added to the knowledge of the coasts, the Greeks having lost their colonies in Asia; the Romans were greatly occupied with their border wars, and the Romans not being inclined to naval enterprise.

After the establishment of imperial power at Rome, the conquests of the Romans went on at a much slower rate, and the boundaries of the empire soon became stationary. This circumstance must be chiefly attributed to the nature
of the countries which were contiguous to the boundaries. The regions north of the Danube are mostly plains, and at that time were only inhabited by wandering nations, who could not be subjected to a regular government. Such at least are the countries on the west extending between the Carpathian Mountains and the Black Sea; and therefore the conquest of Dacia by Trajan was of short continuance and speedily abandoned. The countries between the Alps and the Danube were soon added to the empire; but as the nations who inhabited them north had only given up a wandering life, they were enabled to elude the Roman yoke. The most important addition to the empire and to geographical knowledge was the conquest of England during the first century after Christ, to which in the following century, the south of Scotland was added.

Nothing seems to have been added afterwards. The Geography of Ptolemy contains a considerable number of names of nations, places, and rivers in the countries, which have not been added to the Romans. Probably they were obtained from natives, and from Roman traders who had ventured to penetrate beyond the boundaries of the empire. But these brief notices are very vague, and in most cases it is very difficult to determine what places and provinces are intended.

The overthrow of the Roman empire by the northern barbarians destroyed a large part of the geographical knowledge previously obtained, except perhaps as to that portion of Germany which was subject to the Franks, which by degrees was restored as before. By the end of the fifth century the whole known part of Europe had been surveyed, who contributed largely to extend the geographical knowledge of Europe—missionaries and pirates. The Christian religion had been introduced in all the countries subject to the Roman power. The barbarians who subverted the empire soon became converts to the Christian faith, and some of them ventured among other barbarous nations for the purpose of converting them also. They visited the nations who inhabited the eastern parts of Germany, but here their progress was at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased. The progress of these missionaries was much accelerated when a people who penetrated from Constantinople into the interior of Russia, where they succeeded in converting the Greek church, the different tribes into which the Russians were then divided. This was effected in the ninth century. In the tenth the western missionaries got into contact with the inhabitants by degrees, and the north parts of Europe, especially the Scandinavian peninsula; but this was not owing to pirates who went to but to pirates who came from these countries. The North men or Normans, who inhabited Denmark, Norway, and Sweden, first settled in one set, and in twenty years conquered England. In their new settlements they maintained a communication with their native countries, which thus gradually became known wherever the Normans had settled.

It is worthy of remark, that no part of Europe has been discovered or explored by travellers who went for that sole purpose. We must however make an honourable exception in favour of Alfred the Great, who sent two noblemen to explore the coast around the Baltic Sea; and in the account of one of them, Othwulf, converting into words the knowledge acquired by observation, he has left us a very accurate notion respecting those regions, especially Prussia, more than 300 years before the Prussians were converted to Christianity.

II. Surveys of Europe. In the beginning of the last century trigonometrical surveys were first made with the view of constructing accurate maps. The first of these surveys was made in France under Cassini. Since that time other European governments have caused some parts at least of their respective territories to be surveyed, especially Prussia and Austria. England followed in the same steps towards the beginning of the present century, and to this great national undertaking we owe the publication of the Ordnance Maps. The southern parts of Sweden and Norway have likewise been surveyed. Thus we are now in possession of very exact maps of nearly one-half of Europe. The maps of the other countries of Europe rest on the partial surveys of particular districts, and on a greater or less number of astronomical observations; by means of which we may be able to extend the maps so as to be laid down within certain limits of accuracy. Though maps of this latter kind cannot altogether be relied on, the attention paid by all governments to their gradual improvement has been sufficient to correct very gross errors, and have by such means produced improvements attained a certain degree of correctness.

The great increase in commerce and navigation in modern times has convinced the respective governments of Europe that it was necessary to extend and improve their charts. The coast and the mouth of the river Elbe and the Dollart was surveyed by the French, and continued to the Schelde by the Dutch. The coast between the Schelde and the mouth of the French, while the English ascertained the outer dangers.

Our government has shown great activity in surveying the British coast. A minute and accurate survey has been made of the whole eastern coast of Great Britain south of the Murray Frith, and of the whole southern coast, except the tract between Sidmouth and Plymouth. The western coast, including the Bristol Channel, has been surveyed as far as Barfey Island, and again between Holyhead and Liverpool. Further north only the Solway Frith has been surveyed. The coast of the North Sea between Dublin Bay and Dougal Bay, inclusive, along the northern shores of the island of the Shetland and Scilly Islands as well as Guernsey, Jersey, Alderney, &c. have been surveyed completely, but the survey of the Orkneys is not yet complete. The coast of the British Islands is now fairly well surveyed, and the whole coast of the British Archipelago has been surveyed by the English, and they have also carried on a survey of the islands and coasts of the Archipelago, which nearly completed.

III. Physical Geography. Nearly two-thirds of the surface of Europe is formed of an immense plain; the remainder is partly mountainous, and partly hilly. The plain occupies the east part of the continent; and the hilly and mountainous countries extend along its western and southern border. On the eastern boundary the plain extends across the small continent from south to north, from the mountains of the Caucasus and the shores of the Black Sea to those of the Arctic Ocean. In width it extends in this part of the continent from the Ural Mountains to 26° E. long. To west of this meridian it terminates on the north part of the Ural Mountains, and in the south part of the ranges of Semidavia; on the south it continues along the southern shore of the Baltic, and extends even farther west to the shews of Holland opposite the British Islands. If small extreme are not taken into account, it extends in a south-west direction through Belgium and the north parts of France to the banks of the Seine, where it enters between Paris and the mouth of the river. The part of the plain, west of the meridian of 26°, is narrowed out on the south by the Carpathian Mountains, and other ranges wh...
are connected with them. Towards the eastern part it extends over ten degrees of latitude, but in its progress towards the west it becomes gradually narrower, partly owing to the mountains advancing farther north, and partly also owing to the seas which form its northern border running farther to the south. Here its mean breadth does not exceed three degrees of latitude, except where the peninsula of Jutland joins it. Along the coast of the North Sea it is still narrower.

By this narrow portion of the Great European Plain and the Baltic (which may be considered as its lowest part, being covered with water), the mountain-regions which constitute the western portion of the Continent are divided into two separate systems. To the north lies the system of the Scandinavian Mountains, and to the south what we shall here call the South European Mountain System.

The Great Plain occupies about 2,500,000 square miles, the South European Mountain Region 1,100,000, and the Scandinavian Mountain System about 300,000 square miles.

Scandinavian Mountain System.—This comprehends the whole of the Scandinavian peninsula, or Sweden and Norway. A line drawn from the mouth of the river Torne, at the most northern angle of the Gulf of Bothnia, to the Warnanger Fiord, a bay of the Arctic Ocean, would separate it from the north-western part of the Great Plain. A huge mountain-mass occupies the west part of this peninsula. It rises on the very shores of the sea to a height of some hundred feet, and attains, at a short distance from it, an elevation of 3000 or 4000 feet, and frequently more. South of 63° N. lat. it has not the form of a mountain-range, but of a mountain-plain, its surface frequently presenting a perfect level, and in some places swelling into hills. This elevated plain is from 100 to 150 miles across, and as it attains in many parts the line of perpetual congelation, which in this latitude is about 4200 feet above the sea, a great portion of
it is always covered with snow; while other districts, where the snow melts during several weeks in every year, afford pasture-ground. On the plain there rise a small number of summits, among which the Skagastolstind attains 8400 and the Sneehatten 8200 feet. The western side of the plain is indented by deep inlets of the sea, a prominent from 60 to 100 miles narrow, inland: the eastern side is furrowed by narrow and deep valleys, of nearly the same length.

North of 63° N. lat. the mashes of rocks take the form of a high ridge, the summits of which however rarely exceed more than a few feet, and frequently present a sharp-edged crest. Their ascent on the side towards the Atlantic Ocean is rapid and frequently precipitous, a character which increases as we advance farther north, because the highest part of the range gradually separates the ocean from the land, it constitutes a very abrupt ascent. The highest summit is the Sulitjelma, which rises to more than 6000 feet; but many other parts exceed the snow-line, which varies between 2000 and 3000 feet, and towards the north sinks much lower.

The country to the east of this range, and at the base of it, is more than 1000 feet above the sea, and descends towards the Gulf of Bottnia in long slopes, interrupted by small level plains, and intersected here and there by ridges of hills, running in the direction of the slopes, and appearing more or less to the shore.

Mount Stygelfallen is on the northernmost extremity of the mountain-plain, where it begins to contract to the dimensions of a range. It stands near 63° N. lat., and attains the height of 6456 feet above the sea. From it, as from the top of a high rock, branch off all parts of the country towards the south-east, south and west and south, and though they soon sink down to hills, they continue through the southern part of the peninsula, the mean elevation of which is from 300 to 400 feet above the sea, and above which the hills rise a few hundred feet. The Scandinavian ridges enclose the great lakes of Malar, Weneri, and Wettern. To the south of the last lake these ridges unite, and form the table-land of Smaland, whose surface is on an average about 300 feet above the sea, and which constitutes the most southern extremity of the mountain-chain. It is a low, gentle slope towards the east, but very rapid to the south and west. The peninsula of Scania, which joins it on the south, is low and flat.

The Faroe Islands, which are between Norway, Cape Wrath in Scotland, and Iceland, and nearly equidistant from these three countries, resemble in their conformation the rocky plain of South Scandinavia, rising abruptly from the sea to more than 1000 feet, and presenting on their summits, at an elevation of more than 3000 feet above the sea, a continuation of the mountain-chain which is to be seen towards the south-east, south and west, and south-west of Iceland, which is called the Klofa Yökul, where a surface of more than 8000 square miles has never been explored, probably owing to the thick layer of snow which has accumulated on a mountain-plain which has a mean elevation of 5000 feet above the sea. The western and northern districts of Iceland, which in general rise only to a moderate elevation, though some isolated ridges and summits attain the snow-line, seem to be the produce of that active volcanic agency which has frequently laid waste this portion of Iceland.

Though the Scandinavian Mountains are not visibly connected with the South European mountain system, we may perhaps be excused in considering the island of Great Britain as a sort of link. The western part of Scotland lies in the same parallel with the southern part of the Scandinavian mountain-plain, and bears a considerable resemblance to it in configuration, consisting of one enormous mass of high rocks, which rise abruptly from the sea, and a few small central parts of the plain, with little elevation, and sometimes flat and sometimes diversified with eminences. These plains however are not covered with snow, as they do not rise above 2000 feet, and sometimes attain only 1000 feet, or a little more, an elevation which falls considerably short of the snow-line. In the plains of Scotland north of the Central Grampians (57° N. lat.), with the exception of the greater part of the counties of Caithness and Aberdeen. Even to the south of 57° N. lat. we meet with an elevated plain, above 1000 feet above the sea, which extends from the coast. A similar description is applicable to the western part of Scotland north of the Central Grampians (57° N. lat.), with the exception of the greater part of the counties of Caithness and Aberdeen. Even to the south of 57° N. lat. we meet with an elevated plain, above 1000 feet above the sea, which extends from the coast.

South of these ranges extends the table-land of Spain, the highest parts of which occur between 1° and 4° W. long., where they are from 2000 to 3000 feet above the level of the sea.
the sea. The country east of this line descends rapidly, but in high chains of hills, which contain some mountain summits, to the Mediterranean. On the highest part of the table-land also, a few high mountains occur, as the Sierra Urbion, which rises to 7727, and the Sierra Molina, to 4×960 feet, but they do not form continuous chains. The dividing ridge rises to 5000 or 6000 feet, and attains in the Sierra de Gredos even the elevation of 10,548 feet. In its continuation towards the Atlantic is the Sierra d’Estrella, 3734 feet high; and even the Sierra do Junto, not far from its termination at Cabo da Roca, is 2319 feet above the sea.

The Sierra Morena, which divides the basins of the rivers Guadiana and Guadalquivir, forms the southern boundary of the table-land. It does not however rise much above it, the mean elevation of this range varying between 2000 and 4000 feet. South of the Sierra Morena the country sinks considerably to the valley of the Guadalquivir, which, in its upper part is only about 1000 feet above the sea, and in its lower course traverses an extensive level plain, which, near the sea, is covered with swamps.

The mountains beyond the Mediterranean by a long chain of mountains running east and west, a considerable part of which is always covered with snow, and has therefore received the appropriate name of Sierra Nevada. The highest summits occur in 3° and 4°. long. and are the Sierra Nevada (15,170), Sierra de Macenas (11,996), Cerro de Veleta (11,387), Cerro de Caldera (10,790), and Cerro do Fajas Altos (10,775). Many other summits exceed the snow-line, which, in this latitude, is about 9000 feet above the sea.

The valley between the plain of the Garonne and the valleys of the Rhone and Rhone presents a different character. It contains also an elevated region, rising to between 2000 and 3000 feet above the level of the sea. But this region is of comparatively small extent, being included between the 4° lat, of the E. long. On its surface rise three chains of mountains, which enclose the valleys of the Allier and of the Upper Loire. The most western part is called the mountains of Auvergne, the middle the mountains of Forez, and the eastern range the Cevennes. The mountains of Auvergne, which exhibit unequivocal signs of volcanic origin, rise in Mount Cantal to 6090 feet, in Mont d’Or to 6200, and in Puy de Dôme to 4840 feet. The country west of them continues high and hilly, but gradually declines in elevation as far as the sources of the rivers, (3° lat.) to the point to the west of the Castillon, where the surface is low and level plain. The mountains of Forez rise in the Pietra Haute to 6200, and in the Mount Magdalene to 4800 feet. The two chains terminate about 46°. N. lat., near the town of Moulins, on the Allier; the country extending to the north and north-west of them has a range of high surface, resembling that of the southern counties of England; it varies from 200 to 300 feet above the level of the sea, and does not exhibit ranges of hills, except in the south of Normandie and in Bretagne, where the hills rise from 1000 to 2000 feet.

The Cevennes, which separate the valley of the Upper Loire from that of the Rhone, rise in Mount Merin to 5820 feet, in Mount Pilato to 3516 feet, and in Mount Tararo to 4756 feet. South of 47° N. lat. they sink down to 1000 feet, and to 3000 feet in the south. The continuation of the depression through France runs the Canal du Centre. North of this canal the chain rises again, but to a less elevation, and is here called the Côte d’Or, which, between 47° and 45° N. lat., terminates in a hilly plain, called the Plateau de Langres. On this plain, which extends to the north of the sea, several of the rivers of France take their rise, and among others the Seine. From the north-eastern part of this plain issues a chain of low hills, called Monts Faucilles, which, at 48° N. lat., extends eastward till they meet the higher range of the Vosges, on the frontier between Vevey, in the Canton of Neuchatel, and Wiirttemberg, to 4560 feet. The chain of the Vosges runs parallel to the Rhine and terminates at a short distance from the town of Mayence, in the Mont Tonnerre, or Donnersberg, 2536 feet high. West of this chain, as far as the Côte d’Argent, has a range of high hills which issues from the western extremity of the Monts Faucilles, and separates the valley of the Meuse from the sources of the eastern tributaries of the Seine), extends a rugged country, intersected by valleys and chains of hills, running in a northern direction, and terminating in the Ardennes and the Eifel, which are hilly and rugged plains, about 1600 feet above the level of the sea, occupying the line from Eu to the foot of the Ardennes, and the town of 504° N. lat. West of the Côte d’Argonne extend the dry chalk-plains of Champagne, which gradually subside in the level country which occupies the north of France (the departements of Seine and Marne, Arise, Oise, Seine Inférieure, Somme, Artois, and Nord), and joins that of Belgium. On this plain only a few hills, and those of very moderate elevation, occur at considerable intervals.

We pass now to that portion of the south European mountain system which lies to the east of the valleys of the Rhone and Loire. Here we have the system of the Alps, which extend from the banks of the Rhone as far as east 17° E. long., and cover an immense tract of country, measuring on an average about 130 miles across. The Alps may be divided into the Higher and Lower Alps. The Higher Alps extend from east 19° E. long., and the Lower between 13° and 18°.

The Higher Alps have the form of a quadrant, beginning on the shores of the Mediterranean, and running first due north, but gradually declining to the east, till they run due east, in which direction they are divided through every angle they continue. Their mean breadth does not exceed 100 miles. Many hundred summits, perhaps not less than a thousand, rise above the snow-line, where this is found at somewhat more than 8000 feet above the sea. The highest summits are the Mont Blanc (15,781 feet), Mont Cervin 14,778 feet above the sea. The valleys by which these mountains are intersected are narrow, and sink down to 2500 and 2000 feet, and still lower.

The Lower Alps do not rise to so great an elevation, few of the summits of the chain are above 8000 feet, and the limit is Mont Torgiou, near the sources of the Save, which is 9380 feet above the sea. But the space occupied by these mountains wideus considers actually as they proceed eastward; between 15° and 16° E. long. they are upwards of 400 miles across, and fill the whole breadth of the Great Plain between the Adriatic Sea and the Danube. They form also several chains running east and west, between which there are wide longitudinal valleys. East of 16° E. long., where they approach the mountain system of the Balkan, they narrow to about 80 miles, and continue to run along the Adriatic Sea.

The Alps descend with a rapid slope southward to the plain of Lombardy, which extends from the western part of the Higher Alps to the Adriatic. Its length is about 350 miles, with an average breadth of about 50. Its central and highest hills, between the Po and the Adriatic sea, but it gradually subsides as it advances east, till it terminates in a low sandy shore. It is mostly a dead flat, of great fertility, and very well cultivated.

South of this plain extend the Apennines, a mountain range which, though not very extensive, joins the most southern part of the Higher Alps, and runs in one chain eastward along the plain of Lombardy, from which it rises with a steep ascent. It afterwards turns south and traverses, in different chains, the peninsula of Italy, terminating its most southern extremity, the Capo dell’Armi, on the straits of Messina, with the Monto Aspro, 5300 feet. The highest part of this range is between 43° and 42° N. lat., where the Monte Corico or Gran Sasso d’Italia rises to 9510, and the Monte Sibilla to 7200 feet. Here the valley is wide, and the ranges are wide and fertile. In some places the mountains do not extend to the shores of the sea, but leave spacious plains, as is the case along the Adriatic, north of 44°, and again between 42° and 43°.

The latter plain, called the Tavolara, is an immense plain, without trees, and of very indifferent fertility. Along the Mediterranean occurs the plain of Terra di Lavoro, in which the town of Naples and Mount Vesuvius are situated, one of the most fertile spots of Europe or the world. Many of these mountain districts along the Mediterranean are covered with lava.

The Island of Sicily, which is separated from Italy by the strait of Messina, has a hilly surface. Along the northern coast there runs a chain of low mountains, which, under the name of the Mount Melamia, rise to 3230 feet above the sea. Along this chain is the volcano of Mount Aetna, which attains an elevation of about 9000 feet above the sea. Between the hills, with which Sicily is studded, and sometimes on their very tops, there
are plains of moderate extent, which are sometimes nearly 1000 feet above the sea.

The island of Sardinia consists of two chains of mountains running north and south, and an elevated valley of the eastern chain, which is the higher, rises in Mount Schimbach to 6000, and in the Lyubnara mountains to 5768 feet. The western chain probably does not exceed 2000 feet in elevation. Along the coast there are some low swampy tracts. On the Sardinian side, there are still more mountains. If a few small tracts along the eastern shores are excepted, which are crossed with swamps, it is everywhere studded with high hills and ridges of mountains. Some of the summits attain a great height. Monte Ratonolo is 8000, and Monte Piana, 7000. The higher summits are numerous but very narrow, and of indifferent fertility.

Passing to the countries north of the Alps we find that this great mountain-system, at its western extremity, is bounded on the north by the river Rhone, from the point where the lake of Geneva to its junction with the river Saone. Immediately north of the Rhone there rises another chain of mountains, different in character and in elevation, called the Jura. This chain extends from the banks of the Rhine, in a north-east direction, to the river Arve, and from the banks it terminates between the mouth of the river Arve and the town of Basel. Its length may be about 150 miles, and its width less than 20 on an average. It consists of a number of parallel ridges, rising gradually, and is a base for a larger, nearly Plateau, rising above the sea. Some of the summits exceed 3000 feet in absolute elevation. The highest are towards the southern extremity of the range, The Prè des Marniers attains 5610, Ronnet 5618, and the Bôle 5300 feet.

Along the south-east side of the lower Jura, and between it and the Alps, extends the plain of Switzerland, beginning on the shores of the lake of Geneva and terminating on those of the lake of Constance. This plain is between 1250 and 1360 feet above the level of the sea. At each extremity some hills rise into a considerable height, but the central districts exhibit only a strongly undulating surface. Its length may be about 150, but its width does not exceed 20 miles.

Opposite the northern extremity of the Jura, but on the northern banks of the Rhine, rises the Black Forest, a mountain chain, which in the north-east runs parallel to the Rhine, and whose western sides approach the river sometimes within three or four miles. It terminates on the banks of the river Neckar. Its length may be between 170 and 110 miles. The upper part of this range extends in wide plains, rising to 1000 feet above the sea; the number of summits which rise above these plains is not great. The Feldberg attains 4912 feet, and the Kandel 4160 feet above the sea. The Odenwald, which extends between the Neckar and Main, in the same direction, may be considered as a continuation of the Black Forest. It does not exceed 40 miles in its highest summit, the Katzenbuckel, rising only to 2900 feet.

Between the Black Forest and the Odenwald on the east, and the Voiges mountains on the west, lies the valley of the Rhine, which is about 20 miles in width, but the length from its source to Mayence is not less than 200 miles. At its upper extremity it is 800 feet, but at its lower hardly more than 400 feet above the sea. This valley presents a level surface of great fertility.

The Rhine, below the great ecart of Schaffhausen, is not more than 1000 feet above the level of the sea; but the Danube, at Danzislingen, under the same meridian, is 2200 feet above it: yet between both rivers no mountain-range occurs. With only a hilly surface, and in an extensive plain, the country rises above 1200 feet. This hilly country may be considered as the commencement of the elevated plain of Bavaria, which extends from the foot of the Alp (about 47° N. lat.), between the Black Forest and Odenwald on the west and the Bohemian forest, on the eastern side, to the Rhine and the Black Forest, about 30° lat. The length of this plain is about 1180 miles, and its breadth about the same. The western part of the plain, which joins the Black Forest, is hilly, and intersected by a mountain-ridge, called the Raube Alp, which runs along the northern bank of the Danube for 70 or 80 miles, with a mean width of about 16 miles. South of this ridge the country is nearly 2000 feet above the sea, but north of it less than 1000 feet.

The eastern part of the plain, south of the Danube, is nearly a level, which sinks gradually and almost imperceptibly from the foot of the Alps towards the river. The town of Munich, which nearly occupies its centre, is 1664 feet above the sea, and Raatisbon, on the Danube, more than 1000 feet. That part of the plain which is here called the undulating surface, upon which some hills rise towards the banks of the river Mayn. From the banks of the Danube the country rises slowly, but hardly more than 150 feet above the river, when it forms the water-sided between the Danube and Mayn, and begins to subside towards the level of the elevated river, where it is only from 600 to 800 feet above the sea.

The elevated plain of Bavaria does not extend far enough north to reach the Great Plain, being divided from it by a mountain-region which extends from the upper Danube (about 46° N. lat.), on the western side of Germany, from the very banks of the Rhine to the Fichtelgebirge and Erzgebirge. This region, which has a width of about 100 miles, contains a great number of ridges, bearing different names. Their mean elevation is about 3000 feet, and the highest summits rise upwards of 4000. The most northern of these ridges is the Harz. For a more peculiar account of them we refer to Germany.

The countries which we have hitherto considered are to the north of the Higher Alps. To the north of the Lower Alps, and divide from them only by the narrow valley of the Danube, is another system of mountains, which encloses, in the form of a quadrilateral figure, the kingdom of Bohemia, and may therefore be called the Bohemian or Littoral Monterey. It is divided into eight different names. They attain a mean elevation of 3000 or 3000 feet above the sea; their highest summits rarely exceed 5000 feet. The great valley of Bohemia, which is enclosed by these ridges, is subdivided into numerous basins or small lakes, which sink down from it to those from which it surrounds it. Near the higher ridges the surface of these valleys is 1000 feet and upwards above the sea, but they subside rapidly towards the middle of the great valley, where they are not more than 700 and 900 feet above the sea. Where the Elbe carries off the waters of Bohemia it is somewhat less than 400 feet above the sea.

At the eastern extremity of this mountain-system, where the rivers Oder and Morava take their origin, the Carpathian mountains commence. They run first due east, then the Oder takes a north-east direction, when the range has passed 26° E. long., it turns suddenly to the west, and having proceeded in that direction to 23° E. long., it gradually declines to the south, and terminates on the banks of the Danube on both sides of the meridian of 22° E. long. This range has not less than 1000 miles, from the source of the Oder to the border of Moravia; its breadth is not very considerable, in a few places only exceeding 50 or 80 miles. Its mean elevation may be between 3000 and 4000 feet, but in two places it rises much higher: Tatra Mount, which is intersected by the river Oder, in 23° E. long., is 13000 feet high, and 30 wide in the central parts, whose surface is about 7000 feet above the sea. Above this huge mass there rise about ten peaks which exceed 8000 feet. The highest is the Peak of Lomnitz, which rises to 8475 feet above the sea. The Peak of Ez上述 (dale of feet) is 8600, and the Krywan 8150 feet high. Elevated summits occur again on the most southern part of the range, where the Buzes attains 8700 feet, and Mount Surl 5274 feet. Towards the great plain, and on the north and east, the range sinks via a few ranges or small ridges, forming the shortest points of the rivers Pruth, Serith, and Suezava, between 47° and 48° N. lat. But some considerable offsets occur towards the two extremities of the range. Four chains are detached from it between 18° and 21° E. long., which run southward and terminate not far from the banks of the Danube, after traversing the north-western part of Hungary: they are comprehended under the general term of Hungarian Ore Mountains, from their being rich in gold and silver ore. The valleys between them are wide and fertile. Not considerable ridges form the middle part of the range, but from its eastern extremity or five or six ridges issue; these ridges running in a western direction some hundreds miles, traverse Transylvania, and render the whole of it a succession of mountains and wide valleys, which are generally very fertile.

Between these offsets of the Carpathians on the east, the principal range, and the Hungarian Ore Mountains on the north, and the eastern termination of the Alps (16° E. long.), lies the plain of Hungary, the most extensive that is
included within the South European mountain-system. It extends from north to south about 300 miles, and its mean breadth is not less. The Danube traverses it. To the west of the Danube is a small range on the plain, the Bakony Mountains, which is the highest part, and which rises more than 2000 feet; and farther south, on the 

C. lateral for only It is not an extensive plain, whose surface is several hundred feet above the sea level and walled in on the east by the high mountains which line the western margin of the Eurotas. Some of these mountains are above 2000 and others above 3000 feet high.

The peninsula of the Morea is united to the continent by a rocky isthmus which in one part contains a considerable depression covered with marshes, which is made in antient times to cut a canal. The Morea preserves the character of the countries which are dependent on the Balkan, being very mountainous, especially in its eastern parts, where several lofty ranges run in a south-eastern or south direction. The Eurotas, the Cyllene of the Greeks, seems to be the knot where the ranges unite. Cyllene is 7744 feet high, but the Pentedaktylon (Taygetus), in the southern part of the peninsula, rises to 7920 feet. The central districts of the peninsula contain some elevated plains the Alupha and the Alupha, which are probable limits. The Eurotas rises to 2224 feet above the sea, and Madrid, according to Baoua, is 2222 feet above the same level. In the western districts the mountains gradually subside into hills; and several plains of moderate extent occur along the bay of Euboea and the Alphitans, which form the sea-vals or channels of Triar and the Euripus.

The Great Plain.—Beginning at its western extremity, we find that between the mouths of the Scholoe and the Euboe, the country is barely in an elevated state. It ascends 100 feet above the sea. Its surface is covered with a succession of moors and heaths, ill adapted for agriculture, except in the alluvial tracts along the rivers. But this sterile country is surrounded by fertile marshes, which run along the shores of the North Sea, and are so low that it is

The country between the Danube and the Adriatic is very mountainous: it generally consists of high ranges and deep and narrow valleys, though in some places there are elevated plains of fertile soil, as that on which the town of Joannina (or Yanina) is built, which probably is at least 1500 feet above the sea.

The countries to the east of the Pindus range are less mountainous. The principal, which extends north of 40° N. lat. contains high summits and rich plains; but as it approaches the sea the mountains subside into hills, and the valleys widen by degrees into plains. Mount Athos, or Hagion Oros, is an isolated mass which terminates the mountain-system, and is connected with the tongues of land, and rises to the height of 6340 feet.

Near 40° N. lat. a lateral chain branches off from the Pindus range. It is called Volutza Dagh and runs east, terminating near the sea in Mount Olympus, which attains the height of 7060 feet. Near 39° 30' lat. between Mount Iliamo (5785 feet high) and Mount Veleuchi (7657), two lateral chains branch off to the east and terminate respectively on each side of the Gulf of Zeltoun. In the northern range, called by the Greeks that of Othrys, the Ierracounti rises to the height of 3040 feet. In the south range, known among the antients by the name of Oeta, the Katavathon rises to 7070 feet. Between the Othrys, the northern of these two ranges, and the Volutza Dagh is the plain of Thessaly, celebrated from the most remote antiquity for its fertility. This country extends about 60 miles from north to south it is much narrowed by hills, which advance from the neighbouring ranges 15 or 20 miles into the plain, and on the sea side it is shut in by a barrier of mountains.

The country south of the Oeta range and the Gulf of Arta is mountainous in its western districts, but farther east it assumes a more undulating surface, though some of its numerous elevations rise to the height of mountains, as Mount Parinassis, which is supposed to rise to 6000 feet, and several others are perhaps not much lower.

The mountains of the island of Eubea, which lies parallel to the coasts of Attica and Euboea, belong to the mountain system of Othryand of Oeta, from which it is separated on the north and west by those prodigious fissures which form the sea-vals or channels of Triar and the Euripus.

The country between the Sandria Mountains, the Dis- poto Dagb, and the Balkan is only mountainous towards the western part, but is more flat and open to the east, only into hills, separated from one another by wide valleys, which in several places spread out into plains of moderate extent. This country possesses great fertility, and is one of the finest parts of Europe.
necessary to defend them by dykes from the invasion of the waves. The width of these marshes varies from one to four or five miles, except at the western extremity, where they occupy the whole of the province of Holland. Towards the banks of the Elbe the soil mostly consists of sand, but it begins hero to be covered with forests.

The countries between the Elbe and the Vistula are more fertile, though the sandy soil prevails, especially towards the north; yet even here extensive tracts of fertile land occur within the mountain region which borders on it on the south, especially in Silisia and the southern districts of Poland, the country may be considered as rather fertile. No marshes occur along the Baltic, but at the south-western extremity of this sea a series of small lakes begin which run from north to south into their sinuositys. Their distance from the sea is about 50 miles, and they are situated on the highest part of the plain, perhaps at a mean elevation of 150 feet. They form the watershed between the small rivers which fall into the Baltic and those which run southwards into the interior of the plain.

That portion of the plain which we have so far noticed is drained by rivers which originate in the mountain-region south of it and traverse it in a north-western or northern direction. But east of the upper branches of the Vistula, the river which runs in the plain itself which they drain. These rivers run either north-west and north to the Baltic and White Seas, or south and south-east to the Black and Caspian Seas. The watershed which separates their sources begins about 43° E. long., on the northern declivity of the Carpathian Mountains, and projects its extremity, the Saan, the branch of the Vistula, from the sources of the Dniester. This range of hills runs in a north-eastern direction to the sources of the Bug, another tributary of the Vistula, where it turns north, and is lost in the plain. It is soon replaced by an undulating district, which extends in all Europe. The principal body of this swamp covers nearly the whole basin of the river Priepieh, which extends about 200 miles east and west, with an average breadth of 40 miles. It also continues northward, but with a much diminished width, between the sources of the Nion, Berezina, and Vilna, and terminates on the banks of the Duna, south of Dünaburg and Polots. The surface covered by this swamp is perhaps not inferior to that of England; yet it is not known. We do not know what is the elevation of this swamp above the level of the sea, but we may conjecture that it is not less than 300 feet. Towards the northern extremity of the swamp the watershed turns due east, and is here formed by an undulating country, which opens to the west toward the sources of the rivers Duna and Dnieper. But where it approaches the south of the Volga it turns first north-east and then north, and here it is overtopped by steep and rocky hills. These are the Hills of Waldai, which rise highest in the neighborhood of the town of Kamen, where the height attains 1200 or 1300 feet above the sea. This seems to be the highest point of the watershed. It continues in a northern direction till it passes 60° N. lat. between the lakes of Onega and Niele Oser, and then turns south-east to the sources of the Duna and Dnieper. Hence it proceeds in an east-north-east direction to the sources of the Petshorn, which falls into the Arctic Sea, and of the Kam, a branch of the Volga, where it terminates in the Uralian range. That portion of the watershed which is east of the hills of Waldai is covered with an immense forest, called the Forest of Volkhoysky.

The country north of the watershed is, in general, of moderate fertility; there are some districts which are covered with a sandy soil, while others have a rich soil. That series of small but very numerous lakes which we have noticed in the western part of the plain continues in this at nearly the same distance from the Baltic, forming likewise a subordinate watershed. East of 22° E. long., however it stretches far inland, where it borders on the northern extremity of the great swamp, and then changes its direction to the south, to the watershed of the hills of Waldai, and still farther in the Forest of Volkhoysky, where it terminates near 35° E. long.

The country north of 60° N. lat. is only in a few places fit for agriculture, partly on account of its cold climate, and partly on account of the sterility of the soil. That portion of it which lies west of the lake of Onega is rocky, and is mostly traversed by ridges of rocky hills, which lie in a north and south direction. These hills rise in some places to 500 or 600 feet above the sea. Most of them, as well as the level country between them, affords excellent pasture ground. This region is remarkable for its numerous large lakes, which cover nearly one-fourth of its surface, and are connected by short natural channels. The largest of these lakes in the Volga, Onega, and Ladoga, are of immense plains, covered with moss, which by attracting the water of the melting snow renders them impassable for the greatest part of the summer. A few rocky ranges of hills occur on this plain, but we are not acquainted with their direction and extent.

By far the greater part of the Great Plain extends to the south of the watershed. Contiguous to its southern declivity extends a country of great fertility, from 300 to 400 miles in width. It begins on the west near the foot of the Carpathian Mountains, and terminates on the east where the Volga begins to run south-west-south-west. The parallel of 49° forms its southern boundary, as far east as about 40° E. long., whence it runs in a north-eastern line to the town of Simbirsk on the Volga. The town of Moskwa, situated nearly in its centre, is 480 feet above the sea. The country east of the Volga, as far as the Uralian range, is mostly covered with hills, and is even mountainous, being traversed by the offsets of the great range: it is of moderate fertility in the valleys, which are frequently wide. The hills and low mountainous districts are covered by evergreen forests.

To the south of this region extend the deserts which are called the Steppes. They may be divided into the Higher and Lower Steppes, the line of separation between them being the high ground which extends north and south between the lower part of the South Volga and the Uralian range. The higher Steppes occupy the western part of the plain, extending southwards to the region to the very shores of the Black Sea. Their elevation above the sea may be between 150 and 200 feet. They are without trees, produce only in some places a few shrubs, and have a very flat surface. They are generally traversed by the summer with a coarse grass, which affords very indifferent pasture. In the part of the summer and autumn their dry brown surface shows no sign of vegetation. Agriculture can only be carried on in the narrow bottoms along the rivers. The peninsula of the Crimea is connected with them by a low isthmus. Three-fourths of its surface range of hills; the highest summit, the Chhty Dagh, is 5040 feet. The valley of this range are fertile.

We shall conclude this general survey of Europe by observing, that the Uralian range, which runs about 1500 miles first south and then south-east, rises in its highest summit, the Pawalnoi Kamen, to more than 6800 feet above the sea. The hills of this range, the Lower Steppes extend east to the river Ural far into Asia; and the highest summit Caucasus, which lies on the north side the Caspian, is only few of its summits attain the snow-line, rises in its highest summit higher than the Alps, Mount Elbouz or at least an elevation of 15,600 feet.

Let us finally remark, that if its coast-line is formed alternately by wide projecting promontories and deep bays, which divide it from one another. This peculiarly has led a large proportion of its inhabitants to
see—facing life, and as the winds and weather in the waters that surround this continent are not regulated by the seasons of the year, but are subject to continual changes, this circumstance has given to them that boldness in maritime enterprise which forms the most distinguishing feature in their character, and raises them above most other civilized nations of the globe.

Europe, in fact, considered by itself, is only a large peninsula, which is further cut up into a great number of smaller peninsulas by the interior seas and gulfs which penetrate far inland into the main mass of the peninsula; consequently, in proportion to its surface, it is much farther west and south of east than any other of the great divisions of the globe, as will appear by the annexed table, which however must be considered only as a rough approximation:

<table>
<thead>
<tr>
<th>Surface in square miles</th>
<th>Coast-line in miles</th>
<th>Ratio of one mile of coast to one square mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia 16,000,000</td>
<td>35,000; or including the islands, 420,000</td>
<td>40,000.</td>
</tr>
<tr>
<td>Africa 14,000,000</td>
<td>16,000</td>
<td>900.</td>
</tr>
<tr>
<td>Europe 9,000,000</td>
<td>9,000</td>
<td>195.</td>
</tr>
<tr>
<td>America 15,000,000</td>
<td>32,000 (without the coast of the Arctic Sea).</td>
<td>470.</td>
</tr>
</tbody>
</table>

The Atlantic Ocean, with which all the seas that wash the shores of Europe are connected, except the Caspian (and this is rather to be considered as an immense inland lake, for between Cape of Biscay and the island of Ushant, the English Channel between the northwestern coasts of France and the southcoast of England; St. George’s Channel, between Great Britain and Ireland; and the North Sea, which separates Great Britain from Germany, Denmark, Norway, and Sweden). The North Sea might be considered a closed sea, as it is united on the south to the great expanse of the Atlantic only by the straits of Dover, which, between the South Foreland in Kent and Cape Grisnez in France, is only eighty miles wide. But the narrowest part of the channel, formed in the most part by the English Channel, if it were not on the north connected with the Atlantic by the open and wide expanse of sea that separates North Britain from Norway.

The close seas, which are united to the Atlantic by straits, are the White Sea, the Baltic, and the Mediterranean; with the latter the Black Sea and the Sea of Azof are connected.

The White Sea, the smallest of these inland seas, covers an area of only about 40,000 square miles. The strait by which it is connected with that portion of the Atlantic which lies to the north, is the greatest having the narrowest part being from 30 to 40 miles across. This sea is entirely or partially covered with ice during four or five months of the year. Into its eastern part the Dvina falls; and into the western part of the strait the river Moen. The Baltic is connected with the North Sea by a channel with about 80 or 90 miles of average width; this channel branches off from the North Sea in an east-north-east direction, but afterwards suddenly turns south. That portion of the numerous rivers flowing from the land of Sweden to the east-north-east is called Skagerrack, or the Sleevo by the British sailors, and the other part, which lies south and north, the Cattegat. At the southern extremity of the Cattegat are the three straits by which the Baltic is entered like the Gates of the Bosphorus. The barrier between Zealand and Sweden, on the north, is the passage generally taken by vessels; it is at the narrowest place only about two miles wide. The Great Belt is in the middle between Zealand and Fyen, and eight miles across at the narrowest place. The Little Belt, which is only a large passage for vessels, separates the island of Fyen from the peninsula of Jutland. The Baltic forms three great gulfs—the Riga, Finland, and Bothnia. Receiving, by the numerous rivers which fall into it, great masses of fresh water, it is less salt than the Atlantic, and, especially in late autumn and winter, its water, sufficiently explain why ice is formed nearly every year along its shores, and the navigation is interrupted for three or four months.

The Mediterranean is connected with the Atlantic by the strait of Gibraltar, which is about ten miles across. It is the largest of the close seas which wash the shores of Europe, but it receives the drainage of a comparatively small portion of its surface; the number of rivers which fall into it is very considerable, but few of them run 100 miles. Evaporation carries off a larger portion of its waters than is supplied by the rivers which flow into it, and there is accordingly a strong current setting continually through the strait of Gibraltar, and the motion of this current is extremely powerful. It is crossed by vessels requiring a greater time to sail from the coast of Syria to Gibraltar than from Gibraltar to Scanderoon. Its waters are saltier than those of the Atlantic. It also forms several large gulfs; as, on the European side, the Bay of Lyon, that of Genoa, the Adriatic, and the Aegean Sea, or Archipelago. By means of this strait the Straits of the Dardanelles (one mile across where narrowest), the Sea of Marmora, and the channel of Constantinople (six furlongs across at the most narrow place), the Mediterranean is connected with the Black Sea; and from the Black Sea a constant current pours through the narrow straits into the Aegean. [Eurasia] The Black Sea is connected by the strait of Yenikale with the Sea of Azof. It is less salt than the Mediterranean, and its northern shores in winter are frequently fringed with ice.

The Caspian Sea, whose north-western shores only are included in Europe, is the largest of the numerous seas without an outlet which occur in the north-western regions of Asia. Ice is formed every winter along its northern shores. Its waters are salt, but only to a slight degree.

When we consider these seas as the receptacles of the drainage of the adjacent countries, we find that those toward the east have the most extensive basins. The basin of the Caspian Sea, though it is only drained by two large rivers, the Volga and the Ural, occupies a surface of 120,000 square miles, and is so large that it runs with its northern boundary along the parallel of 60° N. lat. The basin of the Volga, the largest of the rivers of Europe, contains an area of above 750,000 square miles. The basin of the Black Sea is somewhat larger. Its southwestern boundary is formed by the principal range of the Alps; its north-western by a line drawn from Switzerland to Moscow; and another line from this city to the mouth of the Volga, forms its north-eastern border. Its area in Europe is rather more than 500,000 square miles. The basin which is comprised in the part of this basin which is drained by the Danube, Dniester, Dniester, Don, and Kuban, and their tributaries. The basin of the Baltic is nearly equal in extent, including the Cattegat and Skagerrack, being on all sides surrounded by countries which belong to Europe; the basin of the Adriatic, the Black Sea, and the Mediterranean, a surface of nearly 900,000 miles, though perhaps none of its rivers rise more than 350 miles from its mouth in a straight line. The great rivers which fall into the Baltic are the Oder, Vistula, Niemen, Duna, News, and the Dniester; the chief rivers running from the land of Sweden to the east-north-east, are the Torne-elf, Caix-elf, Lulea-elf, Pitea-elf, Scaufjelf, Umes-elf, Angerman-elf, Indala-elf, Lyngga-elf, Lius-elf, and Dal-elf; and likewise the Gota-elf, and Glommen, which fall into the Cattegat and Skagerrack. The basin of the Baltic resembles that of the Mediterranean, in that a considerable portion of it is drained by the rivers of Sweden, and Petshorn, and some other smaller rivers, and occupies a surface of about 400,000 square miles. Though the coast-line of the Atlantic from Cape North Kyn to Cape Tarifa, comprehends the whole length of the eastern declivity of the European coast, including the British islands, its basin probably does not much exceed 600,000 square miles. No considerable river flows into the Atlantic between Cape North Kyn and the mouth of the Elbe. Into the North Sea there flow the Elbe, Elsa, the Rhine, the Scheldt, and of the rivers of Great Britain, the Spey, Tay, Forth, Humber, and Thames; into the English Channel, only the Severn; into St. George’s Channel, the Severn; into the Bay of Biscay the Loire and Garonne; and immediately into the Atlantic the Clyde, the Dee, the Tuske, Guadiana, and Gudalquivir. The basin of the Mediterranean, including the Archipelago, is by far the...
smallest of all those which belong to the inland seas of Europe, comprehending only about 250,000 square miles. The largest of its rivers, the Rhone, flows only 500 miles, including its bends. The other rivers, which are of a considerable length, are the Ebro in Spain; the Po and Tiber in Italy, and the Danube and its tributaries over the Plain of Hungary. All the rivers which drain the basins of the Mediterranean and Atlantic Sea rise in the South European mountain region; those which fall into the Black Sea rise within the Great Plain except the Danube and its tributaries, which drain about 500,000 square miles. The rivers which run to the Caspian rise partly on the watershed of the Great Plain, and partly in the Urals; and the same is the case with those that drain the basin of the White Sea. The rivers which flow from the east into the Baltic Sea rise on the south, the south rise on the edge of the mountain region; and those which fall into it from the north descend from the Scandinavian range.

Climate.—The climate of Europe presents great differences, if we compare it with that of other countries in other climates which lie within the same parallels. It is a well-established fact, that the eastern coast of North America is much colder than the western coast of Europe, under the same latitudes. This difference is in some places equal to 4° or 5° of latitude. Thus we find that the mean annual temperature of London (51° 31' N. lat.) is nearly 56° Fahr., while at Quebec (46° 48' N. lat.) it hardly exceeds 32° Fahr. At Lisbon (38° 43' N. lat.) it is 61° Fahr., and at Williamsburg in Virginia (37° 2' N. lat.) only 56° Fahr. It is however worthy of remark that the eastern parts of Europe, especially the northern parts of the Black Sea, are much colder, and approach in climate those of the eastern coast of America. At Moscow (58° 47' N. lat.) the mean annual heat is nearly 38° Fahr., whilst at Edinburgh (55° 56' N. lat.) it exceeds 47° Fahr.

This difference in the climate of Europe may perhaps be explained by the circumstance that this continent is enclosed on most sides by seas whose water is warmer than that of the ocean at large. The water of the Mediterranean is only 2° or 3° lower than that of the Black Sea within the Romanian gulf. Between America and Europe the warm water of the gulf stream, which exceeds the heat of the other water of the Atlantic by 5° or 10° Fahr., covers a surface not inferior to that of the Mediterranean, and the exhalations of this immense expanse of warm water are carried by the prevailing western and south-western winds to the western shores of Europe. Besides this, the water in the sea between Spitzbergen, Greenland, and the coast of Norway indicates a higher degree of temperature when drawn from some depth beneath the surface than on the opposite face itself. This has been proved by the experiments of Sir John Franklin and Captain Scoresby, though the contrary is the case in all other seas, as far as we know.

Dr. Brewster however thinks that there are two frigid poles in the same hemisphere, in which the decrease of warmth increases with the distance from the meridian in which these poles are situated. By comparing the few exact meteorological observations which have been made in remote countries, he is induced to infer that these meridians are about 90° from the western countries of Europe, and hence he presumes we may account for the greater mildness of the climate in these regions. The observations which the latest traveller through the north of Asia, Dr. Ernian, has made in those remote countries, seem rather to confirm than to overthrow the hypothesis of Dr. Brewster.

With respect to climate, Europe may be divided into three zones, the northern, the central, and the southern. These zones may be separated from one another by two lines, of which the northern begins near 60° N. lat., on the western coast, and terminates between 45° and 44° N. lat., on the Ural range on the east; the southern commences about 45° N. lat. on the west, and terminates on the east at the month of the Danube (45° N. lat.). In the northern zone only two seasons occur, summer and winter; the former lasts about five months, and the latter about seven months. These seasons are separated by a spring and autumn of a few days, rarely two weeks' duration. In summer the heat is very great, and the vegetation increaseth very rapidly. The winter is severe and bitter and brings destruction in its train. In the central zone the four seasons are distinct, and the passage from heat to cold and vice versa is very gradual. The heat is less than in the northern zone, and so is the cold during the winter; still frost prevails during two, three, or four months, and snow is common except on the coasts. In the southern zone frost is either not felt at all or only during a few days; and snow is of rare occurrence, or it does not lie more than a few days, and the vegetation accordingly is very little interrupted. But the countries within this zone have abundant rains during the last three months of the year, and are subject to great and long droughts in summer. These droughts frequently continue for four or five months, and in some places occasionally for eight or nine months.

IV. The Man of Europe.—Nearly the whole population of Europe belongs to that race which is comprehended under the name of the Caucasian race; but along the Ural range, and in the northern extremity of the continent, a few nations occur which belong to the Mongolian race; to which must be added the Magyars, who inhabit nearly the centre of Europe (Hungary).

The inhabitants of the Caucasian race may be divided into three great branches and several smaller races, if we consider them with reference to their language. The first division comprehends those languages which are derived from the Latin and an admixture of the languages of the extinct aborigines and of the later destroyers of the Roman empire. These languages are spoken in the peninsulas of Italy and Spain and in the countries west of the valley of the Rhine. They are the Italian, Spanish, Portuguese, and French languages. In some districts of the countries where these languages are spoken there still exist the languages of the ancient Romans. These languages are spoken on the sides of the western extremity of the Pyrenean mountains, south and west of the river Adour, the Basque language is spoken by a population not exceeding 600,000 souls, according to the most exact computation. The Cymric language is spoken in Wales, and the language of the Magyars, who inhabit the northern districts of the western peninsula of France, which is called Bretagne (Little Britain), by a population amounting to about 2,000,000 individuals.

The second great branch of the languages is formed by those of Teutonic origin. These languages are spoken by the inhabitants of England, a great part of Scotland and Ireland, Iceland, Norway, Sweden, Denmark, Germany, and Poland, that is to say, by the inhabitants of the northern districts of those countries. The number of the individuals who speak it perhaps does not fall short of 7,000,000. Many persons think that the Cymric and Cætico-Gætic languages ought to be considered only as dialects of the same original language.

The third great family of languages is comprehended under the name of Slavonian. The most western tribes that speak these languages are found in the eastern districts of Germany. The Czecks inhabit Bohemia, and the Wenden the north-western part of the Prussian province of Silesia. In the south-western part of the same province Polish is spoken. Between Vienna and Trieste is another language, which is called Serbo-Croatian. In the eastern districts of Germany; but they call themselves Sloveni. Towards the south the Slavonian language extends to the very summit of the Balkan, the inhabitants of Dalmatia, Croatia, Slavonia, Bosnia, Servia, and Bulgaria, speaking dialects of that language. Finally the Slavonian language is spoken over the whole of the great plain of Europe to the borders of Asia, on the Ural range, and on the river Ural. The most extensively spoken languages of this family are the Russian and the Polish. In the great part of the northern districts of Russia, which the Slavonian language may be considered as prevalent, some extensive districts are occupied by nations who speak different languages. We shall first notice the tribes of Montgolian origin, which are divided into three different groups. The northern tribes are the Magyars, who inhabit the greatest part of the Hungarian plain, especially that portion which lies east of the Danube, from the banks of which river they extend to the foot of the Carpathian mountains, where they
are on every side surrounded by Slavonian tribes. The second group of nations of Mongolic origin occupy the countries between the Scandinavian Peninsula on one side, and the Black Sea on the other side. The Laplanders inhabit the country between the northern extremity of the Gulf of Bothnia and the White Sea; the Finns occupy the country farther south, as far as the Gulf of Finland. At the most eastern point of the Black Sea, the three great lakes of Ladoga, Onega, and Peipus on the other side. The Balbt inhabit the country between the southern extremity of the Gulf of Riga. All these nations speak dialects of the same language, which is said to have a great resemblance to the language of the Magyars. The third group of the Balbt situate along the Volga between the Ural and Volga, and the Ural and Volga and the Volga and Volga. The most northerly tribe is the Samoyed, who occupy the eastern portion of the government of Archangel between the Volga and the Ural. South of them, in the eastern districts of the government of Wologda, are the Sireynes, who also occupy the northern part of the government of Perm. In the southern districts of this government are the Permians, the Wogules, and Wotyakes. Here are also a few families of the Mordvinians, Cheremisses, and Chuwashes, who are dispersed over the surface of the governments of Vitka, Askas, Siminsk, and Pensa, where they inhabit an extensive district on the eastern side of the Volga. Their neighbours on the other side are the tribes dispersed over the districts of Tschernig, and Kirghises. The former occupy the countries contiguous to the Volga, on its eastern bank; but the Kirghises inhabit those between the rivers Tschern and the river Ural. The two latter tribes are Buhdists. To these tribes is still to be added the tribes of the Uralian, among whom are the Turcs and the Russian governments of Grodno, Minsk, Wilna, and Mitau.

The Slavonians, who inhabit Wallachia and Moldavia, speak a peculiar language, with which a great number of Latin words are mixed up. Hence it is inferred that their ancestors inhabited these countries when they were subject to the Roman empire.

The eastern peninsula of southern Europe is inhabited by nations who speak three different languages. The most numerous tribes of this class are the Finns, whose language is used by the Osmanlis or Turks, and the Tartares. Some tribes of the latter nation are also dispersed among the Slavonian nations, on the northern shores of the Black Sea, where they are known by the names of the Nogait Tartars and Meshcheryakes. They are most numerous in the Crimea, and along the northern declivity of the Caucasus. The Great Turkia form the bulk of the population in the three parts of Turkey which lie between the Balkan and the Volga, and the Volga range. The mountainous countries west of the Pindus range are inhabited by the Albanians, who speak a peculiar language, and are considered as the descendants of the Illyrians, the aborigines of the country. The southern part of the peninsula is inhabited by the Greeks, who form the bulk of the population in Greece, and also in that portion of Turkey which lies between the Volga and the Volga range. Their language does not differ substantially from the ancient Greek, of which it is in a modified form, mixed up with some Latin, Italian, Turkish, and other foreign words.

The population of Europe is calculated to amount to about 250 millions in round numbers. The Christian religion is that which governs the prevalent. The Catholic faith is nearly exclusively professed by the inhabitants of Portugal, Spain, and Italy, and also by the majority in France, Austria, Bavaria, Poland, Belgium, and Ireland. Catholics are also numerous in some cantons of Switzerland, and some provinces of Prussia and of Russia. The whole number of the adherents of this faith is calculated to amount to 112 millions. To the Greek church belong the Russians and the Greeks; and a great number of the members of this church are still found in Turkey. The vast numbers of these latter altogether to about 54 millions. The inhabitants of Sweden, Norway, and Denmark are nearly exclusively Protestants; and the various sects of Protestants form the great majority in England, Scotland, Holland, Switzerland, Prussia, and on the north of the Baltic, in Sweden. In France, Austria, Ireland, Belgium, and some provinces of Russia, Protestants are numerous. The whole number is about 52 millions. There are Armenians in Russia, Austria, and Turkey; about 96,000 in all.

The Turks and Tartars, with some of the small tribes of Mongol origin along the Uralian Mountains, are Mohammedans. Their number is supposed not to fall much short of six millions. Among the Laplanders and Samoyed, there are still some who have not embraced Christianity. The Calmucks and the Kirghises are also Mohammedans. At Astrakhan there are a few Hindoos. The Jews are most numerous in some parts of Russia, Poland, Austria, and Turkey. Their number cannot be accurately estimated. In the south-eastern countries of Europe there is a considerable number of gypsies: it is doubtful what their religion is.

The following is a tabular view of the sovereign states of Europe in 1837. The areas and population are given from the latest and best authorities, and, wherever they could be gathered, from official documents. It is hard not necessary to observe that these figures must be considered only as approximations with respect to several of the states of Europe, such as Turkey and Greece, for instance.

<table>
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<tr>
<th>States</th>
<th>Form of Government</th>
<th>Area, Sq. miles</th>
<th>Population</th>
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<tr>
<td>Austria</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
<td>29,600,000</td>
<td>699,000</td>
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<tr>
<td>Hungary</td>
<td>Absolute monarchy, with the exception of Transylvania</td>
<td>29,600,000</td>
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<td>Italy</td>
<td>Absolute monarchy, with the exception of Transylvania</td>
<td>29,600,000</td>
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<tr>
<td>Russia</td>
<td>Absolute monarchy, with the exception of Transylvania</td>
<td>29,600,000</td>
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<tr>
<td>British India</td>
<td>Absolute monarchy</td>
<td>49,000,000</td>
<td>2,890,000</td>
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<tr>
<td>Portugal</td>
<td>Absolute monarchy</td>
<td>39,000,000</td>
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<td>Spain</td>
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<td>Austria</td>
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<td>France</td>
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<tr>
<td>Netherlands</td>
<td>Absolute monarchy, with the exception of Transylvania</td>
<td>29,600,000</td>
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(3) (a) The area is assumed from the President's decree of the 5th of April, 1837. (b) The population, according to Rüppel's Almanach for 1837, is 3,086,000, besides 1,300 troops.
Zoology of Europe.—In giving a general view of the animals of Europe, it will be found that the number of wild quadrupeds at present existing (many species having become extinct from the progress of civilization), is too small to exhibit many characteristic peculiarities in their geographical distribution, and local adaptation; and the close connexion of this continent with that of Asia makes it very difficult to draw any exact line between their productions. Many of the animals of the south of Europe are also common to those parts of Africa; and most of the quadrupeds inhabiting the northern parts of our continent are found in the corresponding latitudes of Asia and America. But though the zoology of Europe does not possess much interest from the number, size, or peculiarity of its animals, this is in some measure compensated by the intimate acquaintance which we possess with the habits and manners of many of the smaller species, whose natural history has been carefully investigated by many able and industrious naturalists.

Animals which are common in Europe are arranged according to their position in the orders of the Cuvierian system; those which are peculiar to this continent, and those which are common both to it and other parts of the globe, are placed in separate columns.

ORDER.

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The domesticated quadrupeds occupy a much more important station among the animals of our continent than those of the wild species; under this head we shall mention the horse, ass, goat, sheep, ox, dog, and cat, and the more northern parts of Europe the rein-deer may be added.

No wild races of horses at present exist which have not descended from domesticated varieties; but it seems probable that these were aboriginal in Tartary, and appear only in other parts of Asia. From the former country it is conjectured that they were originally imported into the north and east of Europe; while in the southern and western parts of the continent they were probably derived from Barbary and Arabia; but this is no more than conjecture, as we cannot name any time within historical limits when these animals were not spread over all or the greater part of Europe. The horses of Spain were celebrated in the time of the Romans, after which they were probably lost; but were rediscovered by the Moors during the Moorish dynasty. They may be considered as the lightest and fastest of the old European breeds, and the nearest approaching to the Arab; but they have fallen off greatly during the last century, little care being taken to improve them. In the British Isles the breed is divided into two classes: the British and Arab. The best Spanish horses are generally about four feet six inches high, and closely resemble the beautiful Arabian horses of Barbary called Barb: those of Andalusia, Granada, and Estremadura are the best. The heaviest horses in Europe come from the shores of the North Sea, and the smallest from the north of Sweden and from Corsica. Those of Germany and Italy are of little note. Switzerland produces good draught horses, and those of Holland are noted for the same qualities. The French is a useful and hardy breed, and will endure greater fatigue, though it is not possessed of the size and beauty which now characterize the English horses: the native breeds have been much improved lately by crossing with English stallions. Greater attention is paid to the breeding of horses in England than in any other country except Arabia; but while the Arabs only endeavour to preserve their breed in its original purity, we have improved it by crossing with other varieties, till the English horses both in size and elegance and are equal to the finest in many instances in symmetry, though the Arab still hold their own in power of endurance. The English horses have been divided into four principal classes—the race, the hunter, the carriage-horse, and the dairy-horse.

The ass in Europe holds a very inferior place to the horse.
It is generally an ill-used and neglected animal. Original Asiatic extraction, it does not accommodate itself so well to our climate as the horse; for it feels the effects of cold more, and degenerates in northern countries; a circumstance which partly accounts for the contempt in which it is held. In the southern parts of Europe it is a fine specimen of patriotism, and is supposed to resemble, if not to possess the same docility, as to the shape of the skull, to be discovered between the Scotch bull and the domestic ox. Numerous specimens of fossil skulls, found in the more recent formations, which were supposed to belong to such a species, and are now in the British Museum, present also the same differences. The largest European breeds of cattle are those of Podolia, and the Ukraine, of Turkey, Hungary, and the Roman states. The Roman variety is supposed to have been introduced by the Goths, and their possession of oxen as beasts of burden was thought to denote a larger race, more resembling them which is now seen in Tuscany, of a fine form, and pure white colour. There is a large breed of oxen in Denmark, which is the origin of the Dutch and Holstein varieties; the latter is the parent of the English improved breeds, and the tares seem to denote a smaller race, more resembling that which is now seen in Tuscany, of a fine form, and pure white colour. There is a large breed of oxen in Denmark, which is the origin of the Dutch and Holstein varieties; the latter is the parent of the English improved breeds, and the tares seem to denote a smaller race, more resembling that which is now seen in Tuscany, of a fine form, and pure white colour. The hog occupies a low place in the scale of domestic animals, though its flesh forms an exceedingly good article of diet, and one much used by the peasantry in Christian countries. One of its most valuable qualities is that of preserving exceedingly well in salt, without becoming dry and hard, and losing its nutritive properties. The common wild boar (Sus scrofa) of Europe is no doubt the original parent of our domestic varieties. It was one in which the ancients repeated over and over again, and which was almost exterminated from some countries, as for instance Great Britain. The English breed of pigs is the finest in Europe, and some of them are fattened to an enormous size. In Ireland every country keeps his pig as a regular part of his establishment; and they are the staple article of trade in that country. There is a peculiar long-legged race of swine in Portugal and Spain. The pigs of Poland and Russia are of a reddish colour, and very small.

The dog claims our attention, not for his use as a beast of burden, or in preserving flocks, and tables, but for the attachment he shows to men, becoming his companion and friend, assisting him in his pleasures, and protecting his property and home.

M. F. Cuvier has divided the different varieties of dogs into three principal races. The first is the large and muscular elongated, and we may remarked that all the wild species, as the Dingo of New Holland, &c, belong to this group, and more resemble the wolf and fox: this therefore may be considered as the most natural type. The second group has the jaws shorter than in the first, and is not so muscular; and we may here mention as belonging to this species the Alpine spaniel, or Mount St Bernard dog, a variety of the Spanish breed, which is a beautiful and intelligent animal, kept by the monks at the monastery, from whence it derives its name, for the preservation of the unfortunate travellers, who are often lost in the snows of this inhospitable region. Two of them are said to be sent out together, one carrying a cloak, and the other a basket of provisions and cordials: thus provided, they often succeed in the most difficult of journeys, and always return to the emigrants, who are otherwise perish with cold and fatigue. In the last group, which have the muzzle very short, are placed the mastiff, bull-dog, pagan, &c. Our English breeds of mastiffs were once so celebrated that the Roman emperors appointed men over them in the draymen, and always ordered them to be sent to Rome to fight in the arena; and in later times, when in our own country savage conflicts between dogs and wild beasts were a fashionable amusement, great care was bestowed on the breeding of bull-dogs, and the English nation have done the diversity of opinion respecting the origin of the domestic cat, and the part of the world from whence it originally came. It has been thought by some that it must have been an inhabitant of warm climates, as it is a very animal, and always keeps near the fire as possible. Cuvier believed that it was a native of our European forests, and was the same species as the wild cat at present found, having been only altered by the effects of domestication. In support of this opinion, it is
a-scerted that rats in some places, near woods or forests, will stray away and return to a savage state, when they assume very much the characters and appearance of the wild cat. According to Bovet (History of Quadrupeds), wild cats are very little in variety in most climates. The domestic cat is very useful in destroying vermin, as rats and mice, and is a favourite pet, though it is not capable of much attachment.

The reindeer, which is naturally wild in the north of Europe, becomes tame when tamed by the Laplander, of the greatest value to him. It serves him for food, clothing, and as a beast of burden; by its organisation it is fitted for crossing the snowy wastes, which without this animal would be impassable; it will draw a great weight when well-grown, and in case of necessity it can go afoot. The riches of a Laplander are estimated by the number of reindeer which he possesses; during the winter season when the ground is covered with snow, and the ox and horse would be unprofitable, the reindeer remains in use. There are two distinct species (Clavus gracilis), which grows in the greatest abundance, and often covers the soil in sterile places for miles, affording nourishment for vast herds of reindeer, which root for this vegetable under the snow like swine in a sty. Attempts have been made to domesticate this animal in England, but hitherto they have not succeeded.

There are many wild European mammals at present met with, and which belong to the genus Bovus, 18 species of which belong to the tribe Brachyotis, 18 species of which belong to the genus Cervus, as the small and harmless race of bats. The most common and most known species is the F. musculus, the fitter-mouse of the English, which lives in caves, runned buildings, church-towers, the roofs of houses or churches, and hollow trees, where it is often found during summer, wrapped up in the wing membranes, and suspended by the hind feet. There are three or three perhaps more European species of the genus Rhinophus, commonly called horse-shoe bat, which has been described as found in Europe. As many as sixteen bats have been enumerated by Jenny as inhabitants of Britain.

Most of the Carnivora of Europe are very insignificant animals by the size of their congenerous of Asia and Africa. The only furbearers which at present are found without the limits of our continent are the wolf, the weasel, and the fox; but it seems probable that the lion was once met with in the south of Europe. Herodotus says that it was found in Greece between the rivers Nestus and Acheloos (v. 242); and he mentions the existence of the animals of Assyria being annon by lions on its march from Aracatians to Thrace [Athens]. The fact of these animals having inhabited our continent is also attested by Aristotle, Pliny (unless he is merely copying other writers), and Panorm. Of the domestic animals there are none in Europe, the common brown bear (Ursus arctos), and the polar bear (U. maritimus): the former was once general over the whole continent, and is now found widely diffused in the most southern districts from the arctic circle to the summit of the Alps and Pyrenees, and it is a bear peculiar to our continent, differing from that of America; however, as he never saw but one living specimen, and did not know its habitat, it was probably only a variety of the former species. The latter is confined to the frozen regions surrounding the north pole, but a solitary individual is occasionallly drifted as far south as Iceland, or even the northern extremity of Norway and Lapland. The wolf and fox, the latter under different varieties or species, appear generally distributed over Europe; the former is even now not uncommon among the mountains of the most elevated parts of France: when pressed by hunger, it will descend to the farms, and even attack the inhabitants. The lynx, once common in central Europe, has for some time been extirpated, except from some parts of Spain, the Apennines, and in the mountains of Asia Minor, and in Sweden; the size of the wild cat, which is still said to be a native of Britain. The common glutton or wolverine (Gulo arcticus) is a native of Denmark. It is one of those animals whose tracks and habits are known with entire precision; it preys on reindeer, and other large animals, though it will kill prey of the smaller kinds, as mice, martens, &c.; but the stories of its falling from the boughs of trees on to the backs of deer and other large animals, and maintaining its hold there till they drop with the force of their own bulk, are fabulists and tales in a period of blood, and unless entirely fictitious, as it is a most cowardly animal, and must be easily killed with a stick.

Of small carnivorous quadrupeds there are several species; as many as eight Muschb, or weasels, inhabit different parts of Europe, which are particularly destructive to birds.

Few of the Rodentia of Europe require particular notice. The beaver was formerly recorded as a British animal; at present it is found in the neighbourhood of the Rhone, the Danube, the Rhine, and other large rivers on the continent. The porcupine (Arida erex), the squirrel cat (Sciermophilus), has been met with in Italy, and other parts of the south of Europe. The flying squirrel (Spermozygus eburnus) is an inhabitant of Denmark, and Lapland, as well as one or two species of lemming (Ochrogaleus). The different kinds of rats and mice are so widely distributed in Europe that it is difficult to describe them in every region. There are 16 species range in different genera, from an important feature in European zoology. One species of Hamster (Craterus vulgaris) is distributed over central and northern Europe; and two species (Arbinius nutanis and Bolos) and the common Hamster, or Squeak, of the Germans, occurs in the same region.

The wildcat, the only aboriginal pachyderman animal in Europe, was formerly an inhabitant of the forests of Great Britain, and was one of the noblest and most favourite objects of the chase; it is still found on the Continent.

The number of Ruminants found wild in Europe is extremely limited, there being only eight species. Of these five are deer, all of which are also inhabitants of other continents, viz., the elk or moose-deer, the rein-deer, the fallow-deer, the fallow-hog, and the roe-deer. They are all described in the article Deer. The three remaining animals of this order are the ibex, the chamois, and the musk-deer. The first (Capra ibex) is found, though rarely, in the Alps, Apennines, and Pyrenees, and is very common in the other mountainous parts of Europe and Asia; it lives only in the most lofty and inaccessible places, and is sought for at the extreme peril of the hunter. The chamois inhabits also the wildest and most precipitous regions in the mountains of Europe, though it scarcely ascends to the same heights as the ibex; it is placed in the same group with the antelopes, though by some naturalists it is considered that it should form an intermediate genus between those animals and the goats. The musk-deer (Oryx ammon) is distributed over Europe, and in its trange to Europe, we have already mentioned as being the supposed parent of our domestic sheep; it has disappeared from the continent, though there is no reason for believing that it formerly existed on the mountains of Spain. The Cervidae are very numerous; it is a little known. Their habitation being in the deepest recesses of the ocean, it is impossible to learn much of their habits and characters; and hardly any species can be said to be peculiar to one continent more than another, for the same whole species is found on both sides of the Atlantic; some of which appears confined in its range to Europe, we have already mentioned as being the supposed parent of our domestic sheep; it has disappeared from the continent, though there is no reason for believing that it formerly existed on the mountains of Spain.

The birds of Europe are much more numerous than the mannnal. Above 400 species have been described as regular inhabitants of our continent, and a good many more are occasional visitors; but we must confine our notice to a few of the more remarkable and tropical species. In the northern or arctic regions very few birds are met with, and
most of them belong to the wading and swimming orders; to whose nourishment and increase the arctic solitudes are particularly congenial. Almost all these species are found also in the northern parts of Asia and America; and the largest, the penguins, occur in southern latitudes, extending even to the shores of the Mediterranean. One of the most characteristic birds of arctic Europe is the great snow owl (Strix nyeata), which preys chiefly on the ptarmigans and ground squirrels, and frequent these northern regions in great numbers. Two of our most effectual orders are the true owls and the sapsuckers, which are almost peculiar to the Alps, is a noble bird, partaking more of the characters of the true falcons, being very courageous and sanguinary; it is above four feet and a half long, from the tip of the bill to the extremity of the tail, and attains the heights of the clouds. Herring gulls, also, are very abundant, found on the western coasts of Europe towards the end of the summer for the purpose of depositing their spawn, and at that time immense numbers are caught, particularly on the British coasts, where they abound. It was supposed by the ancients, and not without reason, that the herrings migrated from the Northern Ocean in the spring, and returned there after depositing their spawn; but it is the more recent opinion (which is supported by the authority of Mr. Yarrell) that these fish inhabit the deep waters round the coasts of Lapland, and only migrate to the purpose of spawning, and then retire again to the depths of the ocean, where they remain during the winter and spring. The pilchard (Clupea pilchardus), which belongs to the same genus as the herring, is caught only on the coast of Cornwall, where it is used. In spring and July it goes away in the autumn, and returns in the beginning of January. The anchovy (Engraulis encrasicolus) is principally met with in the Mediterranean; it was a fish well known to the ancients, and made a considerable branch of commerce: the time of its arrival in the Mediterranean from the ocean was observed, and stations for taking it established in places which it most frequented. (Strabo, p. 215.) It is in the interior of the Mediterranean that this fishery is now principally carried on, particularly along the shores of Catalonia, in Provence, in Liguaria, in Sicily, and in Sar dinia. These fishes frequent the coasts of Britain, but not in shoals like the tunny of the Mediterranean.

The salmon (Salmo salar), which is one of our most valuable and finest fishes, is found in all the seas on the north of Europe, Asia, and America, but it has never been met with in the Mediterranean. According to Cuvier it comes from the Arctic Ocean, and is the most abundant of the rivers of northern countries in the spring for the purpose of spawning. In temperate climates it is towards the end of winter that the salmon quits the sea: in the more northern regions it enters the rivers when the ice begins to melt on the shores of the ocean. Though the salmon is confined to the more northern regions, it has not been clearly ascertained how far south it extends, but probably not much beyond the 45th degree of latitude. It occurs, though not plentifully, in the rivers on the western coast of France.

The pike (Esox lucius), which is a palatable and whole-
some fish is exceedingly destructive and voracious; it has been called the fresh-water shark. It is found in almost all the fresh waters of Europe, though more plentifully in the northern than southern parts. It sometimes grows to a very large size.

EUROPE, BOTANY OF. This continent in its most southern limits exhibits a strong resemblance to the vegetation of Africa and its adjacent islands. In Sicily, for instance, along with the vine, grow, in the more sterile situations, the poisonous leaves, Euphorbiæ canarienses, an inhabitant of the Canaries, and its congener E. bohomi- pera, Euphorbiæ denudata, a fine globular shrub, is also common. It grows well with the other plant foods (sals Africano) and the Solanum sodomaeum of Egypt. The Date, the Pusang (Musa Parvisemissis), and the Predky Pear (Curtis Ophianthus), ripen their fruit abundantly; Agave Americana, the American aloe, darts up its gigantic flower-stalks, covered with rows of leaves; and in the sugar-plant (Grysoponum herbarum) yield produce of the finest quality on the banks of the Simeto, while the great Italian reed (Arundo Dona) supplies the place of the bamboo, and furnishes the long stalks on which is trained. Many parts of the south of Spain partake of this character. The Similar exspera bears the bushes with its fragrant flow white clusters, maize and Giana corn are common articles of cultivation, the Peruvian Cherimoya ripens its fruits in multitudes, and the genus of Guaranies, or Pomegranites of Valencia are as common an open crop in the fields of Perica. At Barcelona, in the neglected botanic garden, were still found, a few years since, the Sappan tree of Brazil (Coccius Sappan), the Mastic of Peru and Port, and other similar climates flourishing as if in their native air. In Portugal the laurel (Corypha Lusitania) seems almost identical with the Hix of the Canaries, while the Coral trees at Lisbon unfill their noble leaves and gorgeous blossoms with all their native South American odour. Italy produces many exotic plants, and as far as Nice in the form of the dwarf Palmetto; and the Victor's laurel (Laurus nobilis), a common evergreen, is a European representation of the laurels of the Canaries. Nature usually takes the reign there, the orange, the vine, and the maize and finds a climate congenial to their southern constitutions. Even in valleys the olive will not exist higher than 145° N., nor the vine produce good wine beyond 48°, except in a few sheltered places. About the northern limits of the olive, that is to say, in the parallel of the south of France, a marked change occurs in vegetation; most of the southern equinoctial forms of vegetation either disappear or become uncommon. The Quercus Cerris, so common in Italy and Turkey, is hardly found here. The Ash (Quercus nigra) and its uncommon congener (Quercus vavardata and sessifloris) supply its place. Cluster pines and Scotch firs (Pinus paunita and syleviridis) and other species, especially Pinus halepensis, grow along the sea-coast, and occupy the position held by the more southern autumal pines. The evergreens in Turkey and Syria (Pอาจ), on the branches of which its peculiar mistletoe is sometimes met with, sweet chestnuts (Castanea vesca), the narrow-leaved ash (Fraxinus oxycantha), the flowering ash (Oregna Europaea), and blackbirds, and Phyllyacea increase the catalogue of trees, no vestige of which is to be traced much higher in a wild state. Still more to the north, where the vine begins to languish, its place is better occupied by broad plains of wheat and other corn; the broad leaves of English elm, ashes, oaks, alders, beeches, birches, willows, and poplars are found everywhere, with rich pastures and verdant fields, unknown in the land of oranges and myrtles. At last, in the more northern districts of the continent, aspens (Pseudya tremula), birch trees (Betula alba), birch trees, alder trees, alders, junipers, spruce-firs, and pines are the principal trees that remain; barley and oats are the only corn-plants, but potatoes continue to be reared in the short cold summer.

Among plants less conspicuous than these and less popularly known, changes occur between the north and south of Europe not less striking to the eye of a botanist. In Sicily occurs a Staphy, a form of vegetation so African, that Arabia Felix and Abyssinia are the nearest points where a parallel can be found. Mandrakes (Mandragora officinalis) cover the slopes of Mount Etna, and Sicily in autumn with their sky-blue flowers. Quantities of labiate plants, Boraginaceae, and Caryophyllaceae, Medicago in abundant variety, an endless host of Cystisus and Helianthemum Nuxiuss, Tulips, many species of Ophrys, and numerous kinds of Gentiana and Cythis mark a zone of vegetation correspondent very much with the distribution of the site. To the north of this limit such plants either disappear or diminish essentially in number and variety; Apioeae and Brassicaceae species become predominant, fungi sway in the autumnal zones (Polygona hepatica) are cultivated advantageously, as also are hemp, flax, hops, carrots, parsnips, common clover, bonas, vetches, and lucerne, as common field-crops. But in higher latitudes the predominant forms of herbaceous vegetation are numerous species of Rorantus, Potentilla, Saxifraga, Arenaria, Primula, Mosses, and Lachenia; and there also occur abundance of stunted or pigmy trailing shrubs, such as bilberries and whortleberries (Vaccinium Myrtillus and albo-rosanus), Salix herbae, Arbutus Alpina, Aesculaphyllum, Eu rae, crowberries (Empetrum nigrum) and others.

These changes take place if we merely look to the districts of the plains. In Europe, as in other parts of the world, similar alterations in vegetation occur as we ascend into the atmosphere. In Sicily for instance, with an almost imperceptible separation, in the valleys there is a transition to the middle forms of European vegetation midway on the mountain side, and then to the most northern flora at its summit, 3000 feet above the sea (Et ва); and so with other mountains as we advance to the south, till at last on Teneriffe we reach a state where the vegetation can be observed above the height of 3600 feet.

EURYALE. [STERILEANAE; MEDUVA] EURYBRIA [MEDUVA] EURILAIMUS [MUSCACEAE] EURYMELDON. [ANATOMIA, VOL. L, P. 494] EURYNOME, a genus of brachiopod crustaceans established by Dr. Leach, and forming the second genus of the Parthenopiids of M. Milne Edwards, who considered it establishes the passage between Prochopne or Lamblia and the other Ophrynia. The general form of the body and aspect approximates these crustaceans to Parthepne, whilst the disposition of their external antenna is similar to the conformation in Maja. The corapace is a nearly flat form of a triangle with a rounded base, and is strongly tuberculated and covered with asperities. The rostrum is horizontal, and divided into two triangular horns. The epil is small; the orible deep, their upper border very much projecting and separated from the external antenna by a slit. The internal antennae are bent back longitudinally, and the first joint of the external antenna terminates in the internal angle of the orbit. The epistome is nearly square and the third joint of the external pore feet strong and long, its median suture occupies the two last thoracic rings. The feet of the first pair are scarcely longer than the succeeding ones; in the male they are rather long, whilst in the female they are very short, but less than those of the second pair. The succeeding segments increase in length, the abdomen consisting of seven articulations in both sexes.

Example. Eurynome aspera. Length about half an inch; colour lively red with bluish tints. Localiz, the coast of Normomuir and the Channel (La Manche), at rather considerable depths. (Leach; Milne Edwards.) [Pantoge.]
world, from the Creation till the year 326 of our era. The author gives extracts from Berossus, Ctesias, Berosus, Abydenus, Cophalian, Manetho, and other lost writers.

The second book consists of synecdocal tables, with the names of the contemporary rulers of the various nations and the principal occurrences in the history of each, from the reign of Alaric down to the death of Eusebius, and he has made use of the works of Africanus, Josephus, and others.

The discovery of the Armenian copy of Eusebius has been a valuable acquisition, as it serves to correct several errors and to supply many deficiencies in chronology and ancient historical sources. The original work was divided into three parts: 'The Life of Constantine,' in four books, a piece of panegyric biography. '7. A Life of his friend Pamphilus, of which only a fragment has been preserved.'

EUSTACHIAN TUBE.

EUSTACHIUS, Bartolommeo Eustachio, or Eustachius, was one of the distinguished school of Italian professors to whom we owe the restoration of anatomy and much of its advancement in modern times. He was born in the early part of the sixteenth century, and was a native of Ancona. Having accomplished himself in the classical and Arabic languages, he studied medicine at Rome, and afterwards settled there with a view to practise as a physician, under the patronage of the celebrated cardinal Borromeo. The finest hour of his life, and his unusual talents were sufficient to elevate him to the chair of medicine in the Collegio della Sapienza; yet he never obtained any degree of professional success, and after a long struggle with poverty and sickness, died in great indignity about 1574.

It is not surprising that Eustachius should have failed as a practical physician, for the exclusive devotion with which he pursued his favourite study must have left him little time for the cultivation of his lucrative branches of his art; but the complete failure as a teacher, of a man of so much genius and enthusiasm, is remarkable. It may be attributed perhaps to the ascendency of the rival school of Padua, supported by the wealth of Venice, and illustrated by the name of Vesalius. The cause of his failure may be due in part to a defective temper, of which some indications may be observed in his writings, and to his jealousy with which he concealed his discoveries. Eustachius published little in his lifetime, though he lived long past his prime; yet his treatises, sketches, and notes, are, and composed when anatomy was yet an infant science, are of high authority even at the present day, and bear witness to the accuracy and extent of his researches. They are all in Latin, and are nearly all collected in his 'Opuscula in 4to.' The first edition was published by himself, and again by Boerhaave, Leyden, 1707, in 8v0. He also published an edition, with annotations, of Eratosthenes' 'Lexicon Hippocraticum.' His principal work, 'On the Disputed Points of Anatomy,' upon which he evidently bestowed much labour, was published in 1569, and dedicated to the memory of Vesalius. The work was entitled 'Eratostheniana.' The importance attached to these plates, after so long an interval of oblivion, shows how much Eustachius must have preceded his age; and they prove that many facts of great importance, which were afterwards given to the world two years afterwards by Lancisi, with the aid of Morgagni, Pacchioni, and other anatomists of distinction. Several editions of them have since appeared with voluminous commentaries; the best is that of 1768, published in 1776. 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of the commentaries of Eutocius, those on the treatise of Archimedes 'On the Sphere and Cylinder' are most valued; and chiefly for his account of the various modes of solving the Delian problem of the Duplication of the Cube. All of them, however, though of less value both as to historical and geographical interest, still entertain one who takes a pleasure in investigating the history of pure science.

The commentary on the 'Measurement of the Circle,' by Archimedes was translated into German, together with that on Archimedes to which it refers, by H. Gutenbeker, Würzburg, 1825 and 1828, 8vo.

EUTROPIUS, FLAVIUS, was a Latin historian of the fourth century. Littlo is known of his life; he was secretary to the Emperor Constantius andJulius, and commented on the latter's unfortuna- te Parthian campaign. He is believed to have been of senatorial rank. He is known as the author of a compendium of Roman history, in ten books, from the foundation of the city down to the accession of Valens, a.d. 365, which, being short and easy, has been much used as a school-book. Megare as it is—for it might be contained in 100 common-sized octavo pages—it is still of some use towards filling up those gaps in history which are left in consequence of the total loss of some writers and the imperfect condition in which others have come down to us. The best edition is said to be that of Haverkamp, Leyden, 1729, 12mo., improved by Verseik, Leyden, 1762, 2 vols. 8vo.

EUTYCHIANS, a sect of Christians which began in the fourth century. It was founded by Eutyches, its reputed founder, though the opinions attributed to him are said to have existed before (de Eutychianismo ante Eutychen, by Christ. Aug. Selig, and also Assemani, Bibliotheca Orien- talis, tom. i., p. 219), was a monk who lived near Constantinople in the reign of the Emperor Valens, and who, it is said, held the doctrine that there was no distinction in Christ between the divine and human natures, being (as he expounded) both  drag of one nature, or else that the human nature was entirely destroyed by the divine nature. Eusebius, bishop of Doryleum, who had already opposed the Nestorians, denounced Eutyches before a council assembled at Constantinople by Flavians, bishop of that city. That assembly condemned Eutyches, and determined that he should be deposed from his see, and that his name should be mentioned in the catalogue of heretics. Eutyches, however, appealed to the council, and convoked a council at Chalcedon, a.d. 451, under the presidency of Dioscorus, bishop of Alexandria, and successor to the famous Cyril, who had himself broached a doctrine similar to that of Eutyches. The majority of the council tumultuously acquitted Eutyches and condemned Flavianus; the bishops opposed to him were obliged to escape, and Flavianus was cruelly scourged by the soldiers; it was in short a scene of disgraceful violence, which earned for the council of Ephesus the name of 'a meeting of robbers.' Flavianus appealed to Leo the Great, bishop of Rome, who, in his answer, condemned the doctrine of Eutyches, but could not obtain of Theodosius the convoca- tion of another council. After the death of his successor, Marcianus, convoked a council at Chalcedon, a.d. 451, which is reckoned as the fourth ecumenical council of the Church, and which the pope's legates attended. By this assembly the acts of the council of Ephesus were annulled. The council excommunicated Eutyches, who had already been banished by the emperor, was again condemned, and deprived of his ecclesiastical office. The doctrine was at the same time expounded that * in Christ two distinct natures are united in one person, and that there is one nature, the human, which is the same in all the persons of the Godhead, and that the human nature is not at all replaced by the divine nature, and that, by consequence, it is not true to say that Christ is both God and man in one person, and not that he is the only begotten Son of God and the Word of God in one person; and that the Son of God is consubstantial with the Father, and not with the human nature; and that the natural distinction between the divine and human natures abides in Christ. This doctrine, which is called monothelitism, was established at the second council of Constantinople, held 1729, 12mo., improved by Verseik, Leyden, 1762, 2 vols. 8vo.

EUTYCHIUS, a Greek mathematician of Ascalon, in Palestine, who flourished about a.d. 530. He was pupil of Isidorus, the architect who designed and chiefly built the celebrated church (now the mosque) of St. Sophia at Constantinople. It is said that he became one of the most distinguished geometers of his time.

He was the general custom of mathematical and philosophical authors, during the decline of learning, to give their views and their discoveries, where they made any, in the form of commentaries on some ancient writer, like Proclus and others, delivered his views in given place; and like them be furnished some valuable contributions to the history of mathematical science amongst the Greeks.

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Eutocius' commentaries on the works of Archimedes and Apollonius are the only works by which he is known to modern readers. His commentaries on Apollonius were published in Halley's Oxford edition of the works of that author, 1710; and those on Archimedes in various editions, from that of Basil, 1844, to that of Oxford, 1792.
all however comprehended under the general name of Monophysites, or believers in one nature. (Assemani, 'de Monophysitae,' at the beginning of vol. ii. of his Bibliotheca Orientalis, and Alboufarqui's arguments in favour of that opinion, vol. pp. 258, &c.) In the sixth century a fresh impulse was given to the Eutychian doctrine by one Jacob, a monk, surnamed Baradusaeus, who reconciled the various divisions of the Monophysites throughout the East, and with Benevento, through Syria, Armenia, Mesopotamia, and Egypt, found them dividing, prelates (among others in the bishop of Alexandria), and died himself bishop of Edessa, A.D. 588. He was considered as the second founder of the Monophysites, who assumed from him the title of patriarch, under which appellation his library constituted a very numerous church, equally separate from the Greek, the Roman or Latin, and the Nestorian churches. The Armenians and the Copts are Jacobites, and so likewise many Syrian Christians in contradistinction to the Armenians, who belong to the Greek church. Jacobite congregations are found in Mesopotamia.

The Monothelites who appeared in the seventh century have been considered as an offshoot of the Eutychians or Monophysites, though they pretended to be quite unconnected with them. They held the two sacra in Christ, explaining that after the union of the two into one person there was in him only one will and one operation. This was an attempt to conciliate the Monophysites with the orthodox church, and it succeeded for a time. It was approved and defended itself in the study of theology, with the view of setting in that profession and maintaining a shade of melancholy over his whole life, had a favourable influence on his poetical talent, producing in him that depth of feeling and pathos which discovers itself in his 'Balder's Død' (Death of Balder).

At this period, however, poetry, at least authorship, for a time disappeared. As he was being beneath his step-father's roof, he joined with his elder brother in the scheme of entering the Prussian service as hostages. The latter returned after reaching Hamburg, but Johannes proceeded to Magdeburg, where he resided, but not received as bishop. In 1747, receiving disappointment he deserted to the Austrians; served in Bohemia; and was at Dresden when that capital was besieged by the Prussians. On his return to Denmark he published his 'Lykke's Temple' (The Temple of Fortune, a vision), which at once stamped him as a poet. He was succeeded by his 'Adam and Eve,' a dramatic composition replete with poetical energy, yet in many respects defective and anomalous. Conscious of its imperfections, he devoted two years entirely to a study of poetry and the best models, in order to prepare himself for some more finished undertaking. Having made himself master of the English language, he carefully perused Shakespeare, with whom he was before acquainted only through Wieland's translation. The first Master Skou appeared as his first work, and when he again took up his pen, he composed his 'Roll Krage,' a tragedy strongly tinted with Ossianic taste. It was first given to the public in 1770; about which time he was attacked with a most painful disorder in his limbs, which began with his feet, and continued during the rest of his life. Notwithstanding his severe suffering, he not only pursued his literary occupations, but wrote his comedy of 'Harlequin Patriot,' a masterpiece of its kind, abounding with pleasantry and satire chiefly directed against the Jacobites and the pseudo-reformed church. He resolved to publish his literary chef-d'œuvre, 'Balder's Død,' a drama of extraordinary poetical beauty, and greatly superior to anything of the kind that had then appeared in the Danish language. Yet although well received, its merits were not so well appreciated by his author's contemporaries as they have been since. Although it is on this and his other poetical works that his reputation chiefly rests, Evald produced several things in prose, some of which—as his 'Forelg om Peverende' (Project respecting Old Bachelors), are replete with eloquence, humour, and satire. His great特点是, they were written when he had to contend both with ill-health and distressed circumstances. Their liveliness forms a strong contrast to the seriousness and even melancholy that pervade his other writings; in which respect he presents a parallel to the author of 'Wilhelm Tell.' It is likewise another point of resemblance between Evald and Cowper; each in his affliction met with generous sympathy and succour from a female friend. What Mary Unwin was to the one, Madame Skou was to the other; and it was likewise a source of consolation to him to feel that his poetry was, in part at least, the subject of his own sentiments; and that the poet breathed his last, on the 17th March, 1781, after being confined during two years to his bed or arm-chair, and almost deprived of the use of his limbs. The two poets may further be likened to each other for the high moral tone of their writings, vividness of conception, and simplicity of expression.

EVANGELIST is the Greek appellation Evangelistai (ευαγγελίζων, from ευ and αγγελος), which signifies a messenger of any good news, as in Isaiah xlix. 29, "for the heavens and all the stars thereof."
EVELYN, in his 'Discertation on the Gospels' ('Evangelii', vol. i. p. 126, &c.), gives a variety of learned and critical remarks on the word 'synagogue' as the translation of the Hebrew 'synagogā', and remarks upon the 'good tidings'. (See the word in Eusebius' H. E. iv. 23. 1.)

EVELYN, John, author of 'Sylva'; 'Memoirs', &c., was born at West Harting, Sussex, and was a friend to Richard Evelyn Esq., of Wotton in Surrey, and was born at that place October 31, 1620. He received his education at Lewes free school and Balliol College, Oxford. In 1641 he went abroad, and served for a short time as a volunteer in Flanders. Instead of taking arms in the service of the Duke of York, as several of his acquaintance would have inclined him, he went abroad a second time in 1644, with the king's permission, and spent, with one interval, the next seven years on the continent, diligently employed in studying natural philosophy, cultivating his taste in the fine arts, and acquainting himself with such particulars of manners, trade, and manufacture as were most worthy of notice. In June, 1647, he married the daughter of Sir Richard Browne, the royalist ambassador at Paris, and in 1649, having purchased the possession of Sates Court, near Dorking, he fixed his abode there, remaining to the end of his life in the same vicinity. He lived in privacy and study till the Restoration; after which, being much esteemed by the king and of some weight by family, fortune, and character, he was permitted to continue his retirement and engaged in many capacities in the public service. He was appointed a commissioner to take care of the sick and wounded, on the Dutch war breaking out in 1664, commissioner for the rebuilding of St. Paul's, a member of the Board of Trade on its restoration, and in 1693 was one of the first members of the Royal Society, and continued through life a diligent contributor to its 'Transactions.' His most favourite pursuits were horticulture and planting, upon which he wrote a variety of treatises, which are collected at the end of his 'Sylva.' In 1729 he published 'A Discourse on Forest-Trees and the Propagation of Timber in England;' in 1754 'Majesty's Dominions,' first published in 1664. The object of this, the best known and chief of Evelyn's works, was to encourage planting, both as a matter of national interest and as a useful benefit to the present and future generations, and, as Evelyn himself says, had no small effect. In the same year he published the first 'Gardener's Almanac,' containing directions for the employment of each month. This was dedicated to the Duke of Grafton, and threw forth one of his best pieces, entitled 'The Generation of Trees.'

Mr. Evelyn's works on the fine arts are: 'Sculpture,' a history of the art of engraving, in which the first account is given of Prince Rupert's new method of mezzotinto engraving: 'A Parallel of Ancient and Modern Architecture,' dedicated to Sir Hans Sloane, &c., '1657.' All these, though long superceded, were much esteemed, and were in fact valuable additions to the existing stock of literature.

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The canals of St.-Thierry, which connect Ghent with the Scheldt, passes over the country, the little river Craon runs on the south of the town, on a very large scale; it is the north-west of the town, and on the west the Looze, which rises in the north-east quarter of West Flanders and joins the Bruges canal near Evergem. The population of the town is 7790; it contains 640 houses, 2405 dwellings for cotton-printing and dyeing, breweries, distilleries, and soap-mills, which give employment to many of the inhabitants. In 1832 the town contained a communal and six private schools: in the former 57 boys and 49 girls were taught, and in the latter 28 boys and 17 girls were instructed. (Vandervelde's 'Dictionnaire Géographique de la Province de la Flandre Orientale.')

EVERGREENS, in horticulture, are plants which shed their old leaves in the spring or summer after the new foliage has been formed, and which consequently are without leaves through all the winter season. The evergreens are mainly shrubs, as the haurd, the ilex, and many others. They form a considerable part of the shrubs commonly cultivated in gardens, and are beautiful at all seasons of the year.

The principal circumstances in which evergreens physiologically differ from other plants are the hardness of their cuticle, the thickness of the parenchyma of their leaves, and the small number of breathing pores formed on the surface of those organs. These peculiarities, taken together, enable these plants to stand heat and drought with more success than other plants, but also enable them to resist against such influences in excess. Hence we find them comparatively uncommon in those parts of the continent of Europe where the summers are hot and dry, and most of them are much at home in a temperate climate like our own. This is rendered more intelligible by the presence of breathing pores borne by their evaporation pores, or stomates, and those of deciduous plants. As far as this subject has been investigated, it appears that their leaves are usually altogether destitute of such organs on the upper side, and that those of the lower are other more numerous and much less active than in deciduous plants.

The greater part of evergreens are raised from seed; some are propagated by cuttings or layers, and the varieties of those are grafted and budding and grafting. The soil in which they succeed best differs with the different species of evergreens, such as rhododendrons, kalmias, &c., grow best in equal quantities of peat earth, sand, and vegetable mould; European sorts grow in their greatest vigour in a fresh humus soil, and are in almost any kind of soil.

The operation of transplanting evergreens may be performed with success at almost all seasons of the year. Midsummer planting has even been recommended; it however is a work of necessity rather than propriety, because its success entirely depends upon the nature of the weather after the operation; if it be clear and dry for some time after they may succeed; but if, on the contrary, it be hot and dry, they are sure to suffer: for this reason, if the practice may be adopted, it is not to be recommended. The common practice is to plant evergreens when they have been often known to succeed when planted at this season, either for hedges or as single plants. The hollies in one very remarkable case, were carefully dug up in the cool of the evening and removed to large trenches
which had been prepared for their reception; a quantity of water was then poured upon the roots, and the soil thrown upon the top of it, which was carried down and deposited in all the crevices in the trench, rendering the plants perfectly firm. In the meantime, whilst the weather was very favourable for a considerable period after the operation was performed.

Autumn and spring are much better seasons for work of this nature; the plants not so liable to suffer from the intense heat of the sun, and are more likely to be benefited by dews and frequent rains.

But, according to the most experienced cultivators, the winter months (that is, from October to February) are dec-
didely the best; but from the transplanting evergreens, Mr. McNab, who is one of the foremost authorities upon this subject, says,—I have planted evergreens at all seasons of the year with nearly equal success, except from the middle of June to the middle of August, and even during this period I have planted some; but unless the weather is very dull and moist, it is difficult to prevent the plants suffering considerably, and in many cases it is years before they recover. Although, however, I have planted evergreens ten months out of the twelve with little difference of suc-
cess, yet one season has a preference over the others with me, and when there is the power of choice I would recom-
mand late in autumn, winter, or early in spring; that is,
any time from the middle of October till the middle of
February; and, in general, the beginning of this period is
the best. From the middle of October till the middle
of December; always providing that the weather and
the ground are favourable; that is, supposing there is no
frost, no drying wind, nor much sunshine, and that the
ground is not too much saturated with wet, either from
rain or from ground water. One of the
principal things to be attended to in planting evergreens is
to fix on a dull day for winter planting, and a moist day for
spring and autumn planting.'

It is of great importance to keep a number of the more
tender sorts of evergreens in pots, in order to send them
to a distance if required; and if they are to be transplanted
at home their roots are not so liable to be injured as when
d they are dug from the ground. The more tender species of
the following genera should be treated in this way:—Arbu-
sia, Cypripedium, Ericaceae, Laurus, Piny
sola, Phellodendron, Pinus, Quercus, Rhamnus, Thuya, &c.

In lifting evergreens particular care should be taken of the
young rootlets, as upon the success of the
operation, in a great measure, depends; especially if
they have arrived at any unusual size. Some of
the evergreens are planted like other things; but the following
precautions should be observed in all cases where individ-
uals of any great size are the subject of the operation.

When the plant has been hoisted into the hole dug for
its reception, the soil must be thrown in carefully (not
trod in), and a basin made to hold a quantity of water,
which must be filled several times until the whole is com-
pletely saturated; this will convey the particles of soil down
to the roots of the plant, and render it much more firm than
any other method. By this treatment we have seen plante-
tions of evergreens formed without a single failure, which,
when finished, appeared to have been growing for many
years.

It matters little what size the plants have attained, if
they can only be lifted without injuring the small fibres of
the roots: they have been moved, from ten to twenty feet
high and otherwise large in proportion, with complete suc-
cess. Should, however, the roots be unavoidably injured in
transplanting, the branches must be closely pruned and
shortened in proportion; so that when they begin to draw
upon the roots for support they may not require more nour-
ishment than the latter can supply.

Considering the great importance of evergreens in a cli-
imate like that of Great Britain, where they flourish in such
unusual form so much better than in their natural
habitation, it is to be hoped the cultivation of such
plants will be encouraged. On to bleak exposed situations, they cannot be too extensively
planted. The following lists will furnish information as to
the principal kinds to be procured in the nurseries:—

1. Evergreens whose beauty depends exclusively upon
their foliage.

Trees.

Arbor. All the species, where the soil is light enough to
suit them, particularly A. Douglasii, excelsa, the Norway

Spruce. Deodora, the Cedar of India, Cederus, the Cedar
of Lebanon, and Larix, the common Larch, together with
balsamum, the Balm of Gilead, picea, the Silver fir, and
Webbiana, the Silver fir of the Himalaya mountains.

[Amer.] The Cedar of Lebanon will grow well in a
swamp.

Araucaria imbricata, the glory of the mountains south of
Chili: it will hardly succeed north of the midland
counties.

Cunninghamia lanceolata, the Chinese fir; very handsome,
but only suited to the south of England.

Cupressus sempervirens, the common cypress, and C. hor-
izontalis, the spreading cypress, are quite hardy: and the
latter, if to be protected, forms a tree much more orna-
tmental than the other with its formal shape. But the
nurserymen almost always sell a slight variety of C. sem-
pervirens for it.

Cupressus obtusa, the Cedar of Goa, is a beautiful tree,
but not suited the chalk of southern counties.

Hedera Aquifolium, common Holly: the nurseries contain end-
less varieties of it, both green and variegated. The
latter are not to be compared with the others for beautiful
effect.

Juniperus. The J. excelsa forms a fine tree; J. Virginiana,
the common Virginian Cedar, is less handsome; but both
are quite hardy. [Juniperus.]

Pirus. All the species where the soil is light and steril
enough, with that proportion of decayed unfermented ve-
getable matter which this Junmus delights in. The finest
as ornamental plants, are [P. pinnata, taurica, Piusa,
the stone pine, nigricans, halpepinis, and Pullusiana, which
will grow in any soil that is not stiff and swampy in winter.
[P. sylvestris and nigricana are the hardiest.
Quercus. The common species of Quercus, to which there are
many varieties; austrica, of which the Lucombe and
the Fulham oaks are possibly domesticated forms; Tor-
neri, Suber, the cork-tree, and granum, the Bellota, or
Spanish oak with sweet acorns, are all fine species equally
handsome when young as bushes, and when old as trees.
[Quercus.]

Taxus baccata, the common Yew, and justitigata, the Irish
Yew.

Thuja occidentalis, the American, and orientalis, the
Chinese Arbor Vitae.

Shrubs or Bushes.

Aristotelia Maqui, a Chilian broad-leaved shrub, quite
hardy.

Abies Cunbrinathesis, a curious dwarf fir, only suited
to plant singly upon grass.

Cunninghamia lanceolata, the Chinese fir, rarely grows
beyond the middle size.

Arbutus Andranche, the Oriental Strawberry tree, and
hybrida.

Aucuba Japonica, a Japanese spotted-leaved bush.

Buxus sempervirens, the box-tree, will succeed in light,
especially sandy, sterile soil; prefers chalky downs; will
not thrive in stiff wet soil.

Juniperus communis, the common juniper; Suecia, the
Swedish juniper, much less handsome; Sabina, the
Savin bush, excellent for undergrowth and ornamental
a single bush upon lawns.

Laurus nobilis, the sweet bay, quite hardy, though a native
of the warm south, its aromatic leaves employed in
confectionary, pickles, &c.

Ligustrum vulgare, the common privet; excellent for hedges
and for undergrowth, especially the evergreen
variety.

Phillyrea. Every variety of this valuable genus should be
cultivated; oblonga and latifolia as large species, media as a middle-sized one, and angustifolia as a
peaceful bush.

Pirus junifolius or Mughus, the alpine pine tree.

Rhamnus alaternus, of which there are several varieties,
and R. Clusi; hardy bushes, which bear pruning or
cutting down to the ground remarkably well.

Twiners.

Hedera. Many varieties of the common ivy; Canariumus,
the Irish ivy; and chrysanthera, the golden-berried.

II. Evergreens whose flowers have a considerable ef
fluence.
**TREES.**

**Amelanchier arborea** requires peat; grows 40 feet high in North America.

**Arbutus Unedo**, the common strawberry tree; of this there is a beautiful variety with deep red flowers, and another with double flowers, much less handsome than either.

**Avicia officinis** grows within protecting near Edinburgh; dwarf, tough, and several other New Holland species, will flourish without protection in the southern counties.

**Eucalyptus viminalis**, *pulverulenta*, exist in the open air near Edinburgh: these and other species will thrive in the South and West of England.

**Ligustrum lucidum**, the wax tree, a Japanese plant.

**Magnolia grandiflora**, with many varieties; they are scarcely hardy enough to live in this country away from the shelter of a wall, except quite in the south; unproctected specimens exist, however, near Edinburgh.

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**SHRUBS OR BUSHES.**

**Andromeda.** The handsomest species are *A. Catesbii*, *angustifolia*, *Marine*, which is rather tender, *pulverulenta*, *speciosa*, and *fimbriata*. Require peat soil.

**Arctostaphylos Uva Ursi**, a trailing plant.

**Amynopsis Lyoni**, a beautiful little American bush, requiring peat.

**Berberis aquifolium**, *fasciculata*, *repsus*, *Asiatica*, *aristata*.

**Buddleja davidiana** stands the sea-breeze well upon chalky cliffs.

**Cistus**, all the species. They are quite hardy if planted where wet cannot lodge in winter, and exposed to the sun in summer.

**Colletia spinosa**

**Cotoneaster microphylla** and *rotundifolia*, small bushes.

**Cytisus scoparius**, common broom; there is a double variety; *albus*, the Portugal white broom.

**Daphne.** All handsome, the following the most so: *Laureola*, the spurge laurel, grows well beneath trees; *pontica*, with pale green fragrant flowers; and *Cneorum*, or Garland flower, one of the most lovely and sweetly perfumed plants in the world, but not to be cultivated except in a dry peaty soil and a well ventilated situation; late spring frost injures it so much that it is not worth cultivating in valleys.

**Dentae dependens**, and some others.

**Erica Australis**, *cunea*, *sticta*, *Mediterranea*, codononis. [ERICACE.]

**Exsulandia rubra**, illinitsa, montevideosis, handsome South American shrubs. Bees take great delight in the blossoms of the last; the second species smells very strongly of musk.

**Gaultheria elliptica**, with long pendulous catkins of a yellowish green colour.

**Genista tinctoria**, the dyer’s broom, with a few others.

**Helianthemum** of all kinds, to cover rockwork, or ground where the wet does not lodge in winter.

**Kalmia latifolia**, *augustifolia*, especially the first; require peat.

**Lonchodula spiri** and *latifolia*, common lavender.

**Lonchium latifolium**, or Labrador tea, and *palustre*, low bushes requiring peat.

**Mimulus** or *Walls of the Irish heath*; there is a white variety.

**Myrtus communis**, and its varieties; lives out of doors south of London.

**Prunus Laurocerasus**, the common laurel; *hiasanica*, the Portuguee laurel.

**Pittosporum Tobria**, quite hardly south of London; sweet-scented.

**Rosmarinus officinalis**, common rosemary.

**Rhododendron.** Numerous varieties are to be procured; those of *ponticum*, maximum, and catabiense are the most remarkable; hybrids obtained between the Indian and American species is less hardy; *ferrugineum* and *hirisatum*, dwarf alpine species; *campanulatum*, a North American species.

**Spirea Juncifolia**, Spanish broom; and *acutifolium*, a true catkin shrub.

**Viburnum.** Of the Laurinuses, one of the prettiest of all evergreens, there are three species; *V. Tinus*, the common Laurinus, the hardiest; *V. lucidum*, with shining leaves, rather larger and more delicate; *V. strictum*, with upright shoots, more hairy, and the least hardy of the three.

**Ulex Europaeus**, the common furze; a double variety, which is particularly handsome; and *U. strictus*, the Irish furze, a smaller species, which does not flower abundantly.

**Yucca.** Several species quite hardy. They only require to be grown in places where water does not stagnate in winter; *Y. gloriosa*, *filamentosa*, *Dracontium*, *fasciculata*, and *superbus*, are the hardy species.

_TwWINS OF CLIMBERS._

**Bignonia capreolata**, with dull brownish-red trumpet-shaped flowers; rather tender.

**Carpodaphne floribunda**, *glomerata*, *japonica*, *semprevirens*; all handsome honeysuckles.

**Jasminum rotundifolium** and officinale, the common white jasmine.

**Tilia major** and minor, the larger and smaller-pendulous trailers.

**EVERLASTING FLOWERS.** This name is popularly given to certain plants whose flowers have the property of retaining their brightness and colour for many months after being gathered. They owe this quality to a hardness of their tissue, which has even little moisture to part with, and which, consequently, does not collapse or decay in the progress of acquiring perfect dryness. It is generally in the scales of the involucre of composite plants or in the bracts of others that this property resides. Those that wish to grow such plants will easily find the following in the gardens of this country.

**Hardy annuals.** *Helichrysum bracteatum* (yellow), *Xeranthemum annuum* (purple or white).

**Hardy perennial.** *Antoninia dioica* (pink), *tripleresius* and *margaritaceus* (white). *Anthemis alba* (white), *Gypsophila steechae* and *arentium* (yellow).

**Tender annuals.** *Rhodanthe Mangels*, (red), *Morna nitida* (yellow), *Glycmea globosa* (purple).

**Greenhouse shrubs or herbaceous plants.** *Arista cimicium* (crimson), *Helichrysum arvenscens* (white), *ericoides* (pink), *sessoides*, *proliferus*, and others (purple).

**EVESIAM**, a borough and market-town, having separate jurisdiction, locally situated in the hundred of Blacken-hurst, in the county of Worcester, 15 miles south-east from Worcester. It is the centre of the north-western District of Worcestershire; it was long called the Abbot’s Town, or the Abbey of the Abbot of Evesham. This town, called the Abbot’s Town, is a beautiful specimen of the pointed architecture of the period immediately preceding the Reformation; it is supported by panelled battlements, adorned with windows having rich哥特式 mouldings, and surmounted by open embattled parapets and eight pinnacles. It was originally intended for a campanile, to which purpose it was converted in 1745. The tower is 110 feet in height, and is 22 feet square at the base.

A battle was fought near Evesham on the 17th of August, 1625, between Prince Edward (afterwards Edward I.) and Simon Montfort, earl of Leicester. Leicester placed King Henry III., whom he had made prisoner, in the van of his army, hoping that he might be killed by his son’s troops, who were fighting for his release. However, the king was recognised nearly at the first onset by the prince, who rushed through the thickest of the battle to the assistance of his father, and soon placed him in safety. Leicester’s defeat was complete, and he himself, as well as his son, fell in the field.

The corporation claim prescriptive rights and privileges, but they were all confirmed by charter in the 3rd year of the reign of James I. They had the power of trying and executing for all capital offences, except high treason; and as late as 1740 a woman was burnt for petty treason. A court of record is held every Tuesday for the recovery of debts to 100l.; a court of session is also held for the borough on the Friday after the county quarter-sessions. The borough returned two members to parliament in the 23rd of
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Edward L. and again in the reign of James I., since which time it has continued to do so. In 1831 there were 3991 inhabitants: the number registered is 339. Evesham is one of the few municipal boroughs the boundaries of which were not altered by the Reform and Municipal Corporation Acts. The town is pleasantly situated on the banks of the river Avon, on which it is connected with the parish of Bengworth, which is within the boundaries of the borough. The two principal streets are wide and clean, and the town has a cheerful appearance. The Vale of Evesham is famous for the richness of its soil; and large portions of land near the town are laid out in gardens, which supply the neighbouring towns and villages with vegetables and fruit. There are also some corn-mills, and a linseed-oil mill. The market-day is Monday, the Tuesday in October, 1st November, and the 21st of September: the latter, famous for cattle and horses.

The borough comprises the parishes of All Saints, St. Lawrence, and Bengworth, in the archdeaconry and diocese of Worcester. The living of All Saints is a vicarage, which, with the curacy of St. Lawrence, is of the clear annual value of £206. The church is said to have formed part of the abbey; it is in the later style of English architecture, and has a tower, spire, and a handsome porch. The church of St. Lawrence has an original procession of English stained glass; and is an excellent specimen of the ornamented Gothic. In the south aisle is the chapel of Clement Lichfield; it is only 18 feet by 16, but is (as Tindal says) of such elegance and delicacy of construction as a verbal description would but very imperfectly convey. It is a fine piece of architecture.

There are places of worship for Baptists, Quakers, Wesleyan Methodists, and Unitarians. The free grammar-school, endowed originally by Abbot Lichfield, was re-founded by Henry VIII., and again remodelled by James I. The living of Bengworth, a small and pleasant village, and some other emoluments. At Bengworth there is a school, founded by John Deacle in 1709, for poor children of that parish. There are also several dutoins to the poor, and for apprenticing children.

In the vicinity of the town there are a number of old castles belonging to the Beauchamp family, but it was destroyed by Abbot William d'Anderville in 1169, and the site was converted into a burying-ground, for which we believe it has continued to be used down to the present day. (For a full account of the abbey and antiquities, see Tindal's History of Evesham.)

EVIDENCE (Judicial). Evidence, in jurisprudence, denotes the means by which facts are ascertained for judicial purposes. The practical importance of the subject is obvious from this definition; and it has accordingly not only attracted the attention of the learned, who have formed a prominent part of the system of jurisprudence of most civilised countries, though the particular rules of evidence adopted have varied according to the constitution of the tribunal by which judicial truth is to be ascertained. The law of evidence by professional judges, contains (so far as we now know it) few regulations respecting evidence, the whole subject being comprised in one short chapter of the Digest, which lays down several positive rules for the exclusion of witnesses within prescribed limits of consanguinity to litigant parties. In the common law of England, where facts are ascertained by juries, the body of rules and restrictions denominated the law of evidence has been gradually established within the last two centuries. Previously to the time by which we understand that institution, the only positive rules respecting evidence were those which related to the two witnesses in treason required by statutes passed in the reign of Edward VI. This form of the great principle of the admission of testimony seems to show that, in this country at least, the tendency of civilization has been to contract and not to enlarge (as some writers have supposed) the rules of judicial evidence. The accounts of our earlier judicial institutions, respecting the primitive nature of the laws is that it was the practice formerly to admit without scruple or question every species of testimony; whereas the present law of evidence is almost wholly composed of restrictive rules.

In giving a complete statement of the principles of the English law of evidence (which are the same at equity as at common law, and in criminal and civil proceedings) it is proposed--1. To enumerate the limitations which it pre-
be examined, shall not be admissible in evidence for him; nor shall a verdict or judgment against the party on whose behalf he shall have been examined be admissible in evidence against him. By the 27th section, it was enacted that the name of every witness objected to as incompetent, on the ground that the verdict or judgment in the cause in which he is examined would be admissible in evidence for or against the party on whose behalf he was examined, and shall be afterwards entered on the record of the judgment; such endorsement or entry to be sufficient evidence that such subsequent proceeding in which the verdict or judgment shall be offered in evidence.

II. The principal general rule by which the reception of oral evidence is regulated.—The first general rule (which applies equally to written and oral evidence) is that no evidence whatever must be admitted to be pertinent to the point at issue between the parties. The object of special pleading by the common law is to reduce controversies between parties to particular issues, or propositions of fact affirmed by one and denied by the other, which are to be decided by the general or jury. At the root of evidence, that the proofs in the case must be strictly confined to these issues, is founded upon obvious reasons of justice as well as convenience. Secondly, the affirmative of every issue is to be proved; that is, the party in whose favor the affirmative representation is or shall be the burden of proving it. This principle is taken from the civil law: "Ei incumebt probandi qui dicit, non qui negat." Thirdly, in proving a fact, the best evidence of it must be given of which the nature of the thing is capable. Thus, a prior and complete receipt to the execution of a deed is a conveyance of a deed, and still less by oral testimony, where the deed itself may be produced; nor to prove the execution of a deed by any other person than a subscribing witness, when he is living and producible. This rule is justified by the purpose of the offer of secondary evidence to admit the production of the best evidence might have prejudiced the party in whose power it has, had been produced. This rule is not, however, to be understood as requiring that all the evidence which can be given upon the fact in dispute shall be adduced, as, for instance, the attesting of witnesses to a deed or other contract, it is not necessary that more than one should be called. Fourthly, hearsay testimony, which is a statement on oath of what an absent person has said respecting a fact to be proved, is, in general, excluded both on the ground that the witness to the actual fact does not declare his knowledge upon oath, and also because he is absent from the cross-examination of the party who is to be affected by what he states. To this rule, however, there are the following exceptions:—

1. The declarations of persons who are in a special manner under the apprehension of immediate death, and who are therefore considered to be speaking under as powerful a religious sanction as the obligation of an oath; 2. The declarations of deceased persons, and made against their interest, where the party charged with the charge of receiving or the receipt of money on account of third persons, or acknowledging the payment of money due to themselves; 3. The declarations of deceased persons respecting rights of a public nature, such as the bonds of the general customs of a manor or district; 4. The declarations of deceased persons on questions of pedigree, or family occurrences of antient date before the memory of living witnesses, such as births, deaths, or marriages. With respect to the two last exceptions to the rule of declaring such evidence as incompetent, this kind of evidence is admissible, if they have been made post mortem, that is, after the matter to which they relate has become the subject of litigation.

III. Written evidence consists of records, documents, writings, records of proceedings, books of accounts, and do-

ments.—Acts of parliament are records of the highest nature, being the memorials of the legislature: but a distinction is made with respect to evidence between public and private statutes. A public statute requires no express proof in courts of justice, every one being presumed to know it and which he is bound to observe; as to them, therefore, the citation of the statute itself is in all cases sufficient. But private acts of parliament are considered as documents relative to individuals, and must therefore be proved by copies compared with the original roll or parliament. A second and inferior species of records is the proceedings of courts of justice, which are proved by exemplifications, sworn copies, and office copies. Exceptional instances are transcripts made by individuals who authenticate them; they are produced in evidence. Office copies are copies certified to be true and accurate by an officer in the public service; granted to the party by the court to which the records belong. Charters and deeds are proved by the production of the instrument and the proof of the execution by the party to be charged with it; but where the document is more than thirty years old, the execution need not be shown. A general rule is that the original deed must be produced, on the principle already alluded to of its being the best evidence; but this is subject to the following exceptions:—1. Where it has been lost or destroyed by accident; 2. Where it is in the possession of a party, who at the time of the execution of the instrument and who refuses to produce it; in either of which cases the contents of the document may be proved by a copy, or if no copy exists, by oral testimony. Deeds attested must, in general, be proved by one at least of the subscribing wit- nesses; but if the attestations be dead, or are not to be found after a diligent search, or are infamous, or for any other reason incompetent by law to give evidence, the execution of the deed may be proved by the handwriting of the party. The proof of handwriting, by the party to whom the right is transferred, or by the party who was party to the contract and consented to the execution, is in handwriting wholly excluded, comparison of handwriting being indispensably for the purpose. The course is that a witness acquainted with the handwriting of the individual in question, and who has seen him write, or who has had in his possession and examined the handwriting of the party the fact to be proved in his handwriting.

From the above summary of the principal rules of evidence existing in the English law, it will be observed that the system is extremely exclusive. Upon the subject of evidence, the rule of law is to prevent the assertion of one party that he has the right to exclude the evidence of another, and to restrict the amount of credit to be given, but entirely rejects from being heard wherever a peculiar interest in the result of the cause, however small, is shown to exist. So also with respect to the reception of secondary and hearsay evidence, and in cases where there are objections to the second-hand except in the cases above enumerated, it excludes it under all varieties of circumstances. That the statement of an interested person is always to be received with caution, often with suspicion, and often with disbelief, may be readily admitted; that it should be peremptorily rejected as unworthy to be heard is a different and much more questionable proposition. Again, it is true that we ought not to attach so much weight to hearsay evidence as to direct testimony, because it is beyond all doubt that the former is often more perplexed by the circumstances of the means and causes of error are multiplied, in proportion as you remove from the actual observer and add links to the chain of testimony. Any testimony, says Mr. Locke, in his chapter on the Degrees of Assent, the farther off it is from the being and existence of the thing itself, the more force and proof it has. A credible man vouching his knowledge of it is a good proof; but if another, equally credible, do witness it from his report, the testimony is weaker; and a third that attests the hearsay of an hearsay is yet less conclusive. So that, in traditions truths are commonly weakened the force of the proof; and the more hands the tradition has necessarily passed through, the less strength and evidence does it receive from them. Admitting the justice of this objection to the effect of hearsay evidence, it may be asked whether it is not equally reasonable to reject for judicial purposes is justifiable. So also with respect to the mode of proving hand-writing, it might be unsafe wholly to rely upon the evidence of comparison of hands by persons of experience in that occupation, but still the admitted reason should not be admissible in aid of the present vague and insatiable mode of proof by the general belief of a witness. The most plausible reason for the exclusiveness of the English law of evidence is derived from the nature of the common law, which is used as a reference to which other courts refer to withdraw doubtful evidence altogether from their consideration, than to leave it to persons who are often un-
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proof actually legalized are infallible guides to truth, whereas the truth is a thing that is always open to question, liable to lead to a false conclusion as those which are excluded. In this state of things, therefore, there seems no good reason why all practicable means of attaining to truth, however various in their degrees of effectiveness, should not be he

mitted to justice. This was a great advantage in the process of the investigation; the inclination of the courts of late years being to let in as much light to a cause as possible, and to regard objections to evidence rather as matters of credibility upon which juries may exercise their judgment, than of competency to be wholly withdrawn from their own

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The movements made by any body of troops either acting by itself or in conjunction with other bodies, for the purpose of arriving at or of retiring from a field of battle, or of placing itself in a position to act offensively or defensively against an enemy. The circumstances attending the great movements of armies along their line of communication, and the dispositions of the troops on the field of battle, are developed under the words Strategy and Tactics. The present article will therefore comprehend merely a description of the principal evolutions of a battalion of infantry, a regiment of cavalry, and an entire army, are performed; and will conclude with a short account of the movements of light troops in the field.

Evolution of a Battalion—When a battalion formed in line is to move in line or in some position that orders towards the front or rear, in order to ensure exactness in the movement there being three direct sergeants post themselves a little way in front of the centre of the line, and observing some object in the required direction, they advance directly towards it, the battalion following and keeping itself perpendicular to the line of march. While the battalion is thus moving in line, the two flanked companies are wheeled backwards, and made to march in files perpendicularly to the line of the battalion over it; and on a halt being ordered, they face towards the enemy.

This order of march can of course only take place where the country is open; when partial obstacles occur, the troops near them necessarily form in file till they have passed them, and then resume the wheel into their place. When the obstacles are of great extent, and occur frequently, it is evident that the march of the battalion should be in column.

Columns formed for this purpose are designated columns of companies, of subdivisions, and of sections, according as their breadth, or the extent of their front, is equal to that of a whole, a half, or any portion of a company; and they are said to be at open order, at half, or at quarter distance, according as the intervals between the companies or the subdivisions are equal to the length of the column, or to one-quarter of the breadth of the column. The order is said to be close when the several divisions are at the distance of one pace only from each other in the length of the column.

The wheel from line into column, and the converse, when the battalion is at a halt, must obviously be performed by causing the divisions to describe a quarter of a circle on their respective pivots. But when a battalion in column is on the march, it is required to change the route, should the divisions at the full distance, that is, at intervals equal to the length of a division, it is necessary that the first division, after having described on its pivot an angle equal to that which the new direction is to make with the line, should afterwards march forward as soon as the wheeling of its pivot is made, which is done when the other divisions, following the example of the first, have described an equal angle, and the whole is in its required position.

The above directions are made to the evolutions of a battalion, to which the angle evolutions of other troops, in which the principal evolutions of the whole army are formed, and the subordinate evolutions of the two centre subdivisions. In either case the column is equally fit for its purpose, and the preference of one to the other must depend upon the ground or upon the point to which the movement is to be directed: the single column, divided or undivided, is preferable when the ground is narrow; the double column, according to the breadth of the defile; whereas the double column, if much diminished, may be in danger of becoming disordered by the intermixture of the files. For an attack, the column formed on the centre of a battalion can be more rapidly brought to bear, if required point than a column formed on one of the wings, seeing that the divisions in line have but half the distance to march through in order to arrive at their places in the column, and a corresponding advantage is enjoyed when the battalion has to divide in order to place itself in line or echelon.

It is to be observed that the front of a column should never be unnecessarily contracted, and battalions should be so instructed as to render it indifferent whether the first or second rank is in front, or whether the right or left flank is on the left or right. But it should always be remembered that the columns of an army are exposed to the attacks or evolutions of the enemy, and that evolutions may occur in which the order of battle is to be reversed, and then the divisions must necessarily change their positions by countermarching.

A battalion in column at open order is formed in line by merely causing the divisions to wheel upon their respective pivots; but a close column of companies, having its head already in the alignment, is deployed by causing the several divisions to make out by files to the right or left parallel to the alignment; each division having got beyond the required position is wheeled to its place in the line. The deployment may take place upon any one of the companies, which then remains at rest.

Echelon movements are performed when it is required to advance or retreat obliquely, and when a change is to be made in the position of a line, corresponding to a wheel of the whole about some given point: the movements are made to the front when an enemy's flank is to be turned, and to the rear when it is required to cover the flank of the line itself. Echelon movements are the safest that can be made against the manœuvre of the enemy, and have the advantage of preserving a general front during the march. A direct echelon, as it is called, may be formed by the different companies or subdivisions marching from their position in the line towards the front or rear, keeping the same distance apart as they have, on arrival, and remaining in place at the required distances. The oblique echelon is formed by causing the different companies or subdivisions to make a wheel upon their pivots through any angle less than a right angle, but generally not more than one-eighth of it; the parallelism of the divisions being ensured by causing a non-commissioned officer of each division to place himself as the case may require, before or behind some given file, suppose the eighth, from the pivot, and to take a given number of steps on an arc of which that pivot is the centre; the divisions then keeping the wheel up to the required distances.

An important evolution of a battalion is that of placing itself in a square or oblong form, with the men on the four sides facing outwards, so as to be enabled to resist an attack from any side; they are always formed by the whole army, first of all, by the left division, which is always formed hollow, or so as to enclose a space in which baggage or treasure may be placed for safety; if otherwise, it is evident that great numbers of the men would be useless, since they could not use their fire-arms.

When a battalion in line is to form a hollow square, the manœuvre may take place upon any given company, or upon one formed of the two contiguous subdivisions of two companies, which then for the moment remain at rest; while the other companies break out of the line and march, the two companies which are stationary, so as to form with them a column of companies at quarter distance. The second division in the
column closes up to the first, and these two form the front of the square; the two rear divisions then face outwards, the last but one closes up to the last, and these two form the rear of the square. The remaining divisions wheel outwards, and constitute the two sides of the square or oblong of infantry, into which the enemy is intended to resist an attack of cavalry, the two front ranks kneel and slope their firelocks outwards till, at the word of command, they fire a volley: the men in the two standing ranks fire by files, independently of one another. It is said that Bonaparte, while in Egypt, formed his infantry in squares, whose sides were six yards deep, in order to resist the Mamoulke cavalry.

When several battalions form themselves into squares, they dispose themselves either en echelon or in two, or three, or four files preserving the distance of the interval between two squares in the second line; by which means the fire of one square may defend the face of another.

Squares may be reduced to columns, and these to line, by reversing the processes above mentioned. One square consisting of several battalions is not recommended, as much time would be spent in its formation, and the safety of the troops might be endangered should they be attacked while so engaged.

An open column may be obliged to engage in a street or narrow pass where deployment is impossible. In this case, if the column is advancing, the two front companies or divisions fire, the first kneeling and the other standing; after which, on a favourable occasion presenting itself, they may be ordered to retire, the first division, after firing, faces outwards, half to the right and half to the left; these subdivisions file away to the rear, where they re-load; the second division fire, then files to the rear in like manner, and so on.

Directions of Manoeuvre. The movements of cavalry on a field of battle, like those of infantry, consist of marches to the front or rear, in line or en echelon; deploying from open or close columns into line, and the contrary.

If it be required to form a line for attack from an open column, of divisions upon any particular division, those divisions which are in front make a wheel forward equal to three-eighths of a circle, and those which are in rear wheel towards the eight; all the divisions being thus parallel to each other, they march in this order up to the alignment on the division which remained stationary, wheeling into it as they arrive. On the contrary, if the column be in retreat, and it be required to form a line on the defensive from an open column, the movement becomes the first division of the first or leading squadron, all the divisions of the middle wheel equal to one-eighth of a circle, and in this order march up and wheel into the alignment. It must be observed that the line first formed in these cases is to be at the right or left, as it would be to the left in the other case of alignment, in order to allow the officers in front of each squadron to dress the troops, which they can more correctly than the officers of divisions who are in the line itself.

To deploy in line to the front from a close column of squadrons for an attack, suppose on the second squadron; all the squadrons except this break into divisions by threes, as it is called (that is into divisions consisting of three horses in each of the two lines); the divisions of the first squadron between the battle line, the right, and march in that order till they get beyond the squadron on which the line is to be formed; the third and fourth squadrons also break into divisions in like manner, wheeling to the left, and marching till they get opposite their respective places in the intended line, which is being at rest; if the line is in front ground occupied by the first squadron, and into this line all the squadrons now march. But if the line be required to be formed on the rear of the regiment when in retreat, or the purpose of defence, suppose on the fourth squadron, this is done by changing its front by a counterclockwise movement, the others break into divisions, wheel a quarter circle, and march to the left till they come opposite their proper places in the intended alignment, into which they wheel as before, etc.

The evolutions are made as above stated when the regiment is in column with its right in front; but it is easy to apply the precepts to the contrary case.

The reason why the squadrons are made to break into divisions by turns is that, since the breadth of three horses is about equal to the length of one, each division of three can wheel within a space equal to that which it occupies in line: the practice however has been objected to on account of the extension of the files which is produced when marching in this order. Movements by the usual divisions or sub-divisions have been preferred on this account, but the former method prevails.

Evolution of an Army.—The general principles upon which the evolutions of armies, divisions, or brigades are conducted, correspond nearly to those of single battalions. When a whole line has to advance parallel to the line of the battalions is considered as the regulator, and all the others should conform to its movements. The commander of this battalion must therefore devote his whole attention to the direction of the front, which is here indicated by the general commanding the army, while the flank officers of the other battalions must endeavour to preserve the regularity of their own battalions by the line of the colours.

Columns of route or manoeuvre are formed of any number of battalions, each in column of companies or of sub-divisions, in rear of one another; and if the columns are at close order, the interval between every two battalions is only six paces, or the same as if all the troops were drawn up in line. If the interval between the centre of the former and the first quarter of the length of their front, the intervals between the battalions are twelve paces; but when the columns are at open order, the intervals of the battalions should be equal to the breadth of the column, together with the six paces which in all is the same as the distance of the parallel columns, the distance of the several columns from one another in the direction of the line may, according to circumstances, be of any extent, from six paces (in which case the columns are said to be contiguous), to the proper distance for deployment, that is, a distance equal to the length of a column.

A column whose divisions are either at quarter distance from each other, or in close order, can always wheel into a line of column, because each battalion, in performing the wheel, leaves room for the whole of the column to wheel; but a line of contiguous columns, when the depth of each battalion exceeds the extent of its front, cannot for want of room be wheeled into a single column. When such a line of columns can thus be formed, all the columns must be open out to the right or left far enough to allow the wheel to be performed. When a line of columns is required to be changed into a column, for the purpose of performing a march towards either flank, the most convenient disposition will be that the columns open to the right, the column of the former leader of the column remaining in place, the right and left of the columns thus formed in order marching to form the column, together with the former leaders of the lines, which at this time also march as a column, the commander of the whole column forming the centre of the column, and each of the officers commanding a regiment of which the original extent of a column in front is of importance, and defining, in order to pass an obstacle, should be avoided, if possible, on account of the loss of time which it occasions. In fact, it will frequently happen that, at coming to a hill, a ditch, or a bank, the obstacle will be more conveniently passed by extending than by contracting the front.

Echelon movements of an army are almost always those which are made when in presence of the enemy, the interval being usually preventing a confused collision of troops; if they were otherwise advisable to do so, from acting against another in continuous lines. Like the echelon movements of battalions, those of an army may be either direct or oblique; the former are executed by advancing brigades, battalions, or companies parallel to and at unequal distances from their front; and this advance may be made from the centre of the line when it is intended to refuse both wings to an enemy, or from one flank when it
is intended to turn that of the enemy. The direct echelon may also be produced by posting columns in proper situations, ready for deployment, parallel to the enemy's position; so that the distances between the battlelines to echelon should be sufficient to allow them to form squares chequerwise, so as to flank one another.

Oblique echelons of an army are formed by wheeling, and then marching in the new directions so as to gain ground under a flank; or, if the enemy is performing the manœuvre, it should not exceed a company, as it might be hazardous to present one flank of a large body towards an enemy in position, and thus expose the line to be enfiladed. And, as the enemy would endeavour to counteract the intended project of outflanking him, should he observe it, advantage ought to be taken of the localities to concall some of the divisions, and to gain points of support for the bodies placed in advance of the rest of the army. When it is intended to refuse one wing, the battalions are placed in such a manner as to be effective; the reserve might be advanced towards the retiring divisions. Movements of attack may be made in columns, which should deploy in line echelon, thus keeping the menaced flank safe, or as near safe as possible, and the artillery of that part of the line which is stationary should be ready to enfilade the enemy on his advance towards the retiring divisions. Generally speaking, the most convenient order for an army, whether on the offensive or defensive, is in column, protecting itself can be covered by the enemy's artillery; since it may be readily moved up to any given point of attack, while the enemy has few means of judging where that point of attack will be.

Changes in the front of a position in height or under fire, are best made by platoons or corps of companies; but when the line is extensive, the battalions which are most remote from the new alignment, and which may be attacked by cavalry during the movement, should be marched up in columns echelon, thus keeping the divisions being at quarter distances from one another.

The retreat of a line is accomplished by causing each alternate battalion to retire, perpendicularly to the front, to a certain distance towards the rear, not exceeding 200 yards; the other may be able to defend their position by their fires; the remaining battalions protecting the retreat of the others, and then retiring as far as the intervals between the former battalions, who then retreat still further, and so on. The intervals in the lines should be occupied by light troops, or if the enemy should press closely, the second line of the army, after the first battalions have passed through it, must contribute by its fire to the defence of the intervals in the first line.

This retreat by alternate battalions, or by half-battalions, is a safe method, and very necessary, when the corps are attacked by cavalry or fire; and if the retreat is to be continued, deadies and commanding spots of ground must be occupied and defended, as long as possible; by degrees the bodies may diminish their fronts and form themselves into columns of march.

When the whole line is not intended, on a flank of the army being attacked, that flank only may be retired in direct echelon by alternate battalions or half-battalions, beginning with that which is at the extremity of the flank attacked; the remaining battalions then retire, still in echelon, thus keeping the menaced flank safe to the enemy, taking care that the distances between the corps are not so great as to render it impossible for them to defend each other by their fire. Each body must repel an attack, if made upon it by infantry, by a counter-attack; if by cavalry, it must disperse as fast as possible; and if new troops may be formed in the oblique position, if it be thought best this to resist a general attack of the enemy.

The movements of the second line of an army should correspond exactly to those of the first in height and distance. The second is however frequently kept in a line of columns of battalions, and is made to move in that order even when the first line is deployed.

The most proper stations for cavalry are on the wings of an army, because of the class of circumstances unfitted for resisting an attack; and should they be compelled to retire when placed in the centre, there would be left an interval which the enemy might immediately occupy, and from thence extend his wings. This disposition was made by the French at the battles of Hochstedt and Minden, and was the cause of their defeat in those actions. Cavalry are generally employed in the operation of turning a line; and it is evident that this manœuvre must be more readily made from the nearest wing than from the centre.

Manoeuvres of Light Troops.—To the light infantry and riflemen, or troops acting as such, are entrusted the guard of the encampments or cantonments. When an army is on the march they reconnoitre the country, repel any parties of the enemy which the several corps may meet, and advance; and they check the pursuit of the enemy in a retreat.

When a battalion is employed as light infantry, not more than one-third of the men should actually engage as skirmishers; and these, spreading in lines, in rear of the line of battle, and when the skirmishers have advanced about one hundred paces to the front, these supports follow them, and are themselves followed by a general reserve. Each of the supporting bodies and the reserve should be kept in compact echelon, and the skirmishers form in lines so as to form in sections in its rear. The skirmishers advance or retire, as the case may be, in one general line, and they should avoid standing exposed if any cover, as that of a hedge, ditch, or copse, can be obtained on the ground: for the rear rank of the army must be kept as far as possible, and the right or left ranks must be nearly as near the enemy as possible, so that a simultaneous rush towards the spots where they may fire under cover. On open ground, they fire kneeling or lying down, the front rank man discharging his piece at a retiring in rear of the second rank and loading; as soon as he has loaded he gives the word, and, in a low voice, when the second rank men fires and loads, care being taken that the muskets of both ranks are not unloaded at the same time.

On the appearance of cavalry the nearest supporters and the reserve move towards the threatened part, and form squares; the skirmishers at the same time run to any cover from whence they may aid the supports by a cross fire.

When light troops have to advance across a bridge, or through a short defile, on arriving at the bank of the river, or at the entrance of the defile, the skirmishers lie down in line and fire; the supports, strengthened by the reserve, charge the enemy on the bridge, or in the defile, drive him back, and then the skirmishers form in line as skirmishers, while the former skirmishers pass the bridge or defile, and now constitute the supports and reserve. In retreating the supports pass first over the bridge or through the defile, covered by the skirmishers, and immediately deploy, in order to set fire to the bridge or defile, and to make it useless to the enemy; the river or stream then being rapidly passed, followed by the supports, and the whole form in column in rear of the present skirmishers, who then, by their fire, protect the retreat if it is to be continued.

Evora, the principal town of the province of Alentejo, is built upon a hill, and is defended by the remains of a fine open country, which produces wine, oil, and corn, and is south-west of the Serra de Sias, which forms part of the range which crosses Alentejo from east to west. Evora is an archbishop's see, has a college, two female houses of education, a religious house of nuns, and a large belfry, attached to Sertorius, who for a time made this town, then called Eboro, his residence. Julius Caesar, after his Spanish campaign, made Ebor a municipium, with the name of Liberatus and Julia. There is now an elegant bastion erected in the Moorish style. (Murphy's Travels and View of this Temple, with Copies of Roman Inscriptions found at Evora.)

Evora has about 12,000 inhabitants, some manufactures of hats and leather, and a considerable inland trade. It suffered greatly in the French invasion of 1807, the inhabitants having attempted an insurrection against the invaders; many of the inhabitants were put to death. (Southey's History of the Peninsular War.) Evora lies on the road from Lisbon to the Algarve, and is about 80 miles south-east of Lisbon, 10 miles north of Beja, and 50 miles west by south of Badajoz.
EVREMOND. CHARLES de St. Denys, Seigneur de St. Evremond, was born April 1, 1613, at St. Denys le Guast, near Coutances, in Normandy. He entered the army early, and by his literary talents and sprightly wit, was as a Brady, acquired the friendship of Turenne, Condé, and other French noblemen. His romantic adventures and his wit were anecdotes of the day. The death of Condé made him lieutenant of his guards, for the sake of his society; and he fought with that great commander at the bloody battles of Rocroi and Nordlingen. But the prince, though fond of gallantry at the expense of others, could not respect himself; and St. Evremond was by an impudent exercise of his satiric humour, lost his patron and his lieutenantcy in 1648. In the wars of the Fronde he espoused the royal cause, and was rewarded with promotion and a pension. He incurred a three months' imprisonment at Rochefoucauld for writing an Epistle to Cardinal Mazarin; but found means to reinstate himself in the minister's favour. Another indiscretion in ridiculing the treaty of the Pyrenees (unless, as has been said, there to see the secret cause for his disgrace, and this was only a pretext), caused him to withdraw from the court till 1659, when he had removed the cause of his mission to return. But it was then too late for St. Evremond again to change the scene; and though in banishment, his life had all that he required for happiness. He was a devotee of the court, and gave him a pension of 2000L., and his society was courted by the most brilliant of the beauties of that reign; nor was he less fortunate in possessing the regard of William III., who had known him in Holland, and took much pleasure in his company. Despite the employment of the present, and availing himself moderately of every source of recreation, he restored his faculties, mental and bodily, to the last, and died in his 91st year, September 20th, 1703.

St. Evremond was one of those who, aiming chiefly at lucrative courts, courted the patronage of that minor poet, and endeavoured to sustain the reputation which they had enjoyed in life. He passed however extensive reading and an independent and true judgment, as well as wit. His verses are deservedly forgotten; but his treatises on Roman literature and on the modern drama are second only to his best works. 1681. Letters are among the most brilliant specimens of that style of composition in which the French have excelled. He appears to have been a debauchee in revealed religion, but he was not a scoffer, and he checked vaunting insolent to religion. He was a paintings of the hen or another, a man of the religion; but some atheistical books were falsely published under his name long after he was dead. He never derived profit from the sale of his works, nor authorized their being printed; so that the earlier editions, which were all pirated, could not obtain much sale; a pulpitum, however, remained by his popularity. The first correct edition is that of Des Maizeaux, 3 vols. 4to, London, 1703, with a life prefixed, from manuscripts revised by the author and editor jointly, shortly before the death of the former. Des Maizeaux also translated the whole into English. (Bosc. Anti. vide, etc.) Des Maizeaux's Life and Grammont's Memoirs for scattered notices of St. Evremond.

EVREUX, a city in France, capital of the department of Eure, on the little river Ion, a feeder of the Eure, 51 miles south-east of Rouen.

Evreux is mentioned by Ptolomy and by Ammianus Marcellinus, in the Itinerary of Antoninus and in the Theodosian Table. It bore the name of Mediolanum, and was the capital of the Auleric Evreovices. The name Evreovices was afterwards applied to their chief city, and in the middle ages appears under the corrupted Latin forms of Evoeio and Evroas, from which is derived Evreux. It has been matter of dispute whether the old Mediolanum was on the site of the present city or at a village in the neighborhood. In the time of the Arnolds the remains of a theatre and of several antiquities which have been discovered may be considered as showing that Mediolanum was close to, if not on the site of the present city. Evreux came into the hands of the Normans, but the duke of Normandy was so engrossed in his wars and his wars that they were still under the control of the archbishop of Rouen. In the beginning of the twelfth century (in 1119) it was burned by Henry I. king of England; and toward the close of the same century (1194 and 1199) it was twice destroyed by Philippe Auguste, king of France, who shortly afterwards acquired permanent possession of it. The county of Evreux was bestowed as an English earldom on the followers of the house of the English kings, and the castle was subsequently acquired by the French crown. In the wars of the 13th century in France, under Henry V. and VI., Evreux was repeatedly taken and retaken by the English and French. It was captured, after a vigorous resistance, by the French, from whose hands it has never since passed away.

A great proportion of the inhabitants (who in 1832 were 7200 for the town, or 9903 for the whole commune) are peasants. There are few villages of importance. The churchyard is a part built of wood and clay or plaster. The streets are broad and beautifully neat. The city stands in the midst of gardens and orchards in a fertile valley watered by the Ion, which divides into two branches before reaching the town, and down whose banks under or near which wind afterwards reuniting, renders the position of the city insular. Part of the waters of the Ion are conducted through the city by means of a canal.

The principal edifice of the cathedral, which was rebuilt by Evremond I., was finished after he had burned the former one with the rest of the town: the nave alone retains any vestiges of early architecture: its massive piers and semi-circular arches are evidently of Norman origin, and are probably part of the church erected by Henry. All the rest is completely modernized.

The interior is decorated with some elegant carving, both in stone and wood; there are some good specimens of painted glass.

The church of St. Taurinus (formerly attached to the Benedictine Abbey of St. Termont, founded in the seventh century) contains some valuable specimens of Norman architecture: the interior has been modernized. A portion of the monastic buildings serves as a seminary for the Catholic priesthood. The church of St. Gilles, now converted into a priory, possesses many interesting features.

Among the other remarkable buildings are the episcopal palace, the hospital, a fine new building, the office of the prefect, formerly the hospital, and the prisons. There are some handsome public walks.

Some manuscripts of Evreux are woollen cloth, woollen and cotton yarn, bed-ticking, calico, cotton velvet, borsedery, leather, paper, wind musical instruments (flutes, clarinets, &c.), and ivory and box-wood combs. Trade is carried on in these articles, and in grain, brandy, cider, perry, and wines from and to the country. The most important of the last, St. Taurin, lasts eight days. There is a subordinate court of justice, 'une chambre consultative des arts et manufactures,' a central society of agriculture, sciences, arts, medicine, surgery, and pharmacy; a high school; a chapel; an academy; a public library of 20 volumes; and a botanical garden, at which courses of lectures on botany are delivered.

In the neighbourhood of Evreux, about a mile and a half from the town, is the Chateau de Navarre. Jeanne, daughter of Louis Huitin, king of France and Navarre, in the 15th century, after the death of her father, married the then count of Evreux, and built a chateau, which she called the Chateau de Navarre: this structure was, in 1866, levelled to the ground by its possessor, the duke of Bouillon, who received the property; it afterwards passed to other descendants, and became national property, and was given by Napoleon to the Empress Josephine, who resided here for a time. The house, which is of stone, is formal and ill proportioned; but the woods around are beautiful, the avenue noble, and the sheets of water on the estate are extensive. The chateau is now deserted. Old Evreux appears to have been the site of a Norman and previously that of a Roman fortress. There are some remains of a Roman aqueduct and Roman medals in gold, silver, and bronze have been dug up. In the archeological remains of the town are found 11 cauponns and districts under the charge of a justice of the peace; two of these are in the town of Evreux. It comprehends 267 communes, and had, in 1832, 118,397 inhabitants. The diocese comprehended the departament of Eure; the bishopric is an archiepiscopate of Rouen. The foundation of the see is ascribed to the third century. (Dawson Turner, Tour in Normandy; Dulaure, Histoire des Environs de Paris; Dictionnaire Géographique Universel, &c.)
EXAMINATION. [Evidence]

EXANTHEMATA (Exanthematous diseases), Æthyria, a, affluence; a term under which are comprehended the eruptive fevers, or the diseases commonly termed rashes. Rashes are superficial red patches, variously figured, and diffused irregularly over the body, leaving interstices of a natural colour, and terminating in peculiar exfoliations. Fever is an essential element in the exanthematous diseases. Exanthema is an inflammatory process, as the term is usually employed by etiologists; but the writers on cutaneous diseases give it a modified signification, and comprehend under it only those diseases which are properly termed rashes. Whether these rashes are attended with fever, or whether they are contagious or not. Thus Dr. Bateman comprehends under the order Exanthemata measles, scarlet fever, measles, roscola or the rose-pox, and erythema.

EXARCHS were the native governors of Italy under the Byzantine emperors, established by Justinian after the reconquest of Italy from the Goths in the sixth century. The first exarch appointed was Longinus, A.D. 568. The residence of the exarch was at Ravenna, then a seaport town, and the capital between Greece and Italy. The exarchs, who were generally chosen among the officers and favourites of the Byzantine court, were of course removable at the pleasure of the emperor, but several of them remained in their office to the end of their lives. Their attempts to maintain a marked place of opposition and treachery, the results of Byzantine corruption as well as of the peculiar difficulties of their situation. They were engaged in frequent hostilities against the Lombards, who had invaded the greater part of Italy, and were also soon engaged in war with the papal, and their authority was often confined within the walls of Ravenna. At last, in the year 752, Ravenna being taken by Astulf or Astolphus, king of the Lombards, the exarchate, as well as all dominion of the Byzantines over Northern Italy, was at an end; but the Greek exarchate remained possessed of parts of Apulia and Calabria, where Bari became the residence of the Exarch or Byzantine governor. (See Chronological Series of the Exarchate in Petau, Rationarium Temporum.)

EXCAVATIONS. [Foundations]

EXCENTRICITY. [Problematic Hypothesis]

EXCENTRICITY, a term applied to the ratio which the distance between the centre and focus of an ellipse or hyperbola, and the semi-axis transversus of the same, is to the semi-axis conjugatus of the same. (Ellipse; Hyperbola.) With regard to this word, it would be noted that in the older writings on conic sections it was not the ratio of these two lines, but the former of them, namely the distance between the centre and focus, which was called the eccentricity of the conic. Let e be the semimajor axis of an ellipse or hyperbola, b the semiminor axis, and e the eccentricity; then

\[ a = 1 + \frac{b}{e} \]

\[ a = 1 + \frac{b}{e} \]

EXCESS. For a peculiar mathematical use of this term, namely, the spherical excess, see Spherical Triangle.

EXCHANGE. The term exchange is commonly employed by merchants to designate—first, the written instrument by which debts of persons residing in different countries or in different parts of the same country are subject to a condition for final liquidation; and, second, the varying price of such negotiable instruments in the market.

The first division of the subject is discussed under the last, Bill of Exchange; the following article will treat of the second, and will include an investigation of the principles on which exchange transactions are based.

International, or, as it is commonly called, foreign trade, arises out of the unequal or exclusive capacity of different countries to produce the various objects of desire. One country, for instance, has abundance of coal and iron; another enjoys a climate especially adapted to the culture of the vine; whilst a third possesses some peculiar advantages for the growth of wheat. If interchange were not restricted by legislative enactments, if trade were perfectly free, the first country would supply the other two with iron ware, taking from the second wines, and from the third wheat; whilst the two last would in like manner exchange their respective productions with each other.

Peculiarities of soil and climate, abundance and cheapness of labour, the exchange presence of certain animals, vegetables, or minerals, all give rise to interchange between nation and nation. Every country has some peculiarity which gives it an advantage with respect to that peculiarity over all other countries: it is by means of interchange that such advantages are shared equally among all.

In the article Bill of Exchange, already referred to, we have explained how this mode of settling accounts between parties in different countries arose; and the various legal rights of the parties to a bill of exchange are also in that article fully explained.

In investigating that part of the subject which belongs to the present article it is necessary to bear in mind that different countries in different countries arose; and the various legal rights of the parties to a bill of exchange are also in that article fully explained.

In the course of 5 years, the quantity of metal in any variable par cannot exceed the quantity of metal in a par. The following is a statement of the contents, in pure silver, of the several coins forming the money of account of the several countries specified:

<table>
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<tr>
<th>Country</th>
<th>Coin</th>
<th>Grams</th>
<th>Makeshift</th>
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<tr>
<td>France</td>
<td>Franc</td>
<td>69'4</td>
<td>90'4</td>
</tr>
<tr>
<td>Hamburg</td>
<td>Mark</td>
<td>102'16</td>
<td>102'16</td>
</tr>
<tr>
<td>Amsterdam</td>
<td>Florin</td>
<td>146'0</td>
<td>146'0</td>
</tr>
<tr>
<td>Dollar of America</td>
<td>Dollar</td>
<td>S37'01</td>
<td>S37'01</td>
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</table>

Hence the mark is worth, in Paris, 1315 francs; in Amsterdam, 14 florins 5 penningen; and in New York, 28'2 cents.

Gold is now a legal tender in America, and the sovereign is by law worth 1-57 dollars, making the eagle of 10 dollars to the pound sterling equal to 6'96; and the 100'16, sterling equal to 287 dollars; all of which are different expressions for the par between England and the United States—both being gold-using countries.

In the rate that a par and a par exist between two countries making use of different metals as the standard of their respective currencies; we shall now explain the reason. Gold is the standard in England. The silver coin of England possesses a conventional value independent of the market value of the bullion, and is therefore more fluctuate without affecting the former. Foreign coins, the franc of France, the guider for instance, possess no such conventional value. They are merely a commodity liable to fluctuation with the varying price of silver.

Within the last ten years the price of silver in the London market has varied from 48'10fd. to 53'1d. per ounce of 414 grains pure, the medium price being 48'11fd. to 55. The extreme prices give the following results:

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<td>s.</td>
<td>d.</td>
<td>f.</td>
</tr>
<tr>
<td>4'10 fd.</td>
<td>9'1</td>
<td>26'30</td>
</tr>
<tr>
<td>5'</td>
<td>9'24</td>
<td>23'15</td>
</tr>
</tbody>
</table>

Thus making a fluctuation in the so-called par of exchange of rather more than 4 per cent.

The assumption of a par of exchange where no par can exist is likely to lead at times to great inconvenience. Suppose, for instance, that the par between Paris and London be assumed at 25'50fr., which is about the real bullion par. Suppose farther that exchange is quoted at 25'30fr.; what would be the inference? Why that exchange was 2'8 per cent. in favour of England, and the (cost of transmission being much less than the above difference) that consequently bullion was about to pour into London. But sup-
pose that at the same time the market price of silver had declined in London to 4s. 10½d. per ounce, and gold in Paris had advanced in a like ratio, what would be the effect? Why the supposed premium in favour of England would vanish, and the par, for the time being, would be brought to coincide with the actual ratio, necessarily turning. This approximate par (a term which we make use of for the sake of conformity, as nearly as truth will permit, to the language familiar to merchants) should be understood in the connotation of a currency taken over a period sufficiently long to include fluctuations from highest to lowest. To the approximate par so taken will be the tendency of the rate of exchange to conform.

The approximate par of exchange will be liable to be affected by four pairs of circumstances, in addition to the rise and fall in the price of the precious metals. These are:

1. Changes made by the supreme authority in the quantity of the pure metal contained in the coin by way of increase or diminution.
2. Depreciation from the use of paper money, and restoration.
3. Clipping, and restoration.
4. Wear and tear, and restoration.

1. Legal Changes in the Coinage. Governments have not infrequently reduced the quantity of the pure metal contained in the current coin an easy way of getting rid of improvidently contracted debts. The English pound was once a true pound of silver; and it is now about four ounces. The French livre, once probably the same quantity, is now no less than a quarter of a one. By what a succession of frauds must this change have been brought about!

A government having borrowed so many pounds of its subjects would find it a very convenient thing, when the day of payment should come, to half away, or, as people say, clip shillings "a pound;" and as it would have all the debtors in the kingdom on its side, popularity would be divided on the measure. But although creditors at home may be compelled to submit to this robbery, creditors abroad cannot. Their contract is to receive a given sum of the money of their own country, and the only effect of any debasement will be that the foreign debt will require more of the debased money to liquidate it; in other words, exchange will fall below the ratio of the debasement. Thus suppose the sovereign to be debased, exchange on the Paris Bourse, if at 25s. 5s., would fall to 23s. 2s. If, on the other hand, the franc were reduced, exchange would rise.

We can illustrate this by two historical facts. Formerly the Spanish dollar contained as much silver as 4s. 6d. sterling, and consequently the average value of 100l. was 444 dollars 14 cents. The weight of the dollar however has been since reduced, and it now contains only as much silver as 4s. 2d. sterling; so that the average value of 100l. sterling is now 490 dollars; the difference being 8 per cent. The old language of quotation however has never been wholly abandoned by the American merchants. They still assume the old par, so that when exchange is quoted at 10 or 11 per cent premium—a premia which is at times maintained for an hour—it is in fact at 2 or 3 per cent. only (the remaining 8 per cent. being nominal); and when it is quoted at 6 or 7 per cent. premium, it is in fact at 1 or 2 discount. The other fact to which we allude is that if you were to bring the gold standard in the United States, at a rate, compared with silver, to render the American currency practically debased.

Before the introduction of the Gold Bill the average value of 100l. sterling, as we have seen, was 480 dollars; by the new law it is reduced to 441 dollars; in England it was now coined into 487 dollars, being a difference of 1½ ½ or nearly 1 per cent. Thus the par between England and America is now 487d. = 100l., or adhering to the old (erroneously assumed) par, a nominal premium of 9 ¼ per cent.

2. Paper Money. One of the evils to which paper money is liable is depreciation from excess. The market price of money, like that of every thing else, varies in the inverse ratio of its quantity. If it be scarce it will be dear; in other words, all other things will be cheap. If, on the other hand, money be in excess, it will be cheap; in other words, much of it will be given in exchange for other things. To say that prices are advancing is equivalent to saying that money is getting cheaper and cheaper. The effect of issuing paper money in excess is then to be taken, both by merchants and paper, cheap. Being cheap, it becomes desirable to export it; but paper money is not available for this purpose, and hence metallic money is alone exported. Bullion in the unoccupied state would, under certain circumstances, advance in price, but the sovereign would be still a superior medium where there would exist a motive to convert coined money into bullion, or to export it. Bullion however would not be exported, except when it was really cheaper than in other countries.

During the Bank restriction the depreciation reached 27½ per cent. Gold was then worth 5l. 8s. per ounce, and silver 6s. 11d. estimated in paper money. But at these nominal high prices the proportion between gold and silver is precisely in the same ratio as in 1797. The Paris par was then 18½ for 1l. sterling (instead of 25½ for), so that although coin might be sent away as a cheaper mode of conversion than melting, bullion would not necessarily be an article of export, unless the exchange was really, and not merely nominally, against us.

We have seen that the present average value of the dollar is 4s. 2d.; when silver was at 6s. 11d. the value would be 5s. 9d. in the depreciated English money. Hence a debt of 100l. would be discharged with less than 600 dollars, whereas in the gold price, it would require 610 dollars. This would be a decrease of 2½ per cent., whereas now it would require 480 dollars. The dollars remained unchanged, but 109l. of 1813 was worth only 72l. 2s. in gold.

As the par of 4s. 6d. was then, as now, retained, the depreciation was met by a heavy nominal discount of 2½ per cent. It is unnecessary to pursue these calculations to other countries: the same principles apply to all countries.

It is scarcely necessary to observe, that in the process of restoration the phenomena are reversed. A restoration of the English currency, for instance, would be similar in its effects to a depreciation of the currencies of all other countries.

3. Clipping the Coin. In some countries the practice of clipping the coin still continues, and it is likely to continue just so long as people will take clipped coin. If people would take shillings clipped into polygons, they would be clipped in less than twenty-four hours.

The effect of clipping on the exchange is precisely similar to the two cases above; the only effect being a temporary. If the silver coin of France were clipped to the extent of one-tenth of its weight, exchange would be affected to that extent. Instead of requiring only 25½ for 1l. sterling on the Paris Bourse, it would require 26½ for. The silver bullion would be equivalent to the clipped coins of other countries.

Some of the continental states in which clipped coin circulates have adopted an expedient to keep up the character of their money of account. This expedient is to transmit their dealings abroad in the silver called money by them; which may be defined money as it ought to be, to distinguish it from the current or clipped money, which may be called money as it is. The merchants keep their bank accounts in money as it ought to be, paying in the clipped money, or money which has been so exchanged, with the depreciation, which is known by the term Agio. This is purely an arrangement of convenience.

4. Wear of Coin. The case of a worn coinage is precisely similar to that of a clipped coinage, except that the latter is often within in its effects, the former gradual. Once depreciation from wear is much more likely to deceive than that which arises from clipping. Restoration by means of new issue reverses all the effects.

We have now enumerated the principal circumstances attending the value and circulation of money. Fluctuations in the rate of exchange proceeding from an alteration of the value of the medium in which price is quoted are purely nominal; and so they are usually designated. They are alterations proceeding from the altered quantity of money, and are analogous to an alteration of the price of wheat from an alteration in the capacity of the imperial quarter.

What is usually called the real exchange is the actual market-price, determined by the same law as the price of
It is the lowest in rank of the four great courts which sit at Westminster Hall, although in ancient times one of the first in importance, as all causes relating to the rights of the crown were there heard and determined, and the maxims of the great and inferior courts were received as precedents. In point of precedence this court may be attributed to its having been originally erected solely for the king's profit, which was considered an object inferior to the general administration of justice to the subject.

Economists have exhausted much research in ascertaining the origin of the name: some assert that it is derived from the old French word eschequer, a kind of abacus or table; or the German, Schatz, 'treasure.' The specialization having order of the word, giver, and since it was so called from the covering of the table at which the persons sat being party-coloured or chequered, and of which, when certain of the king's accounts were made up, the sums were marked and scored with counters.

EXCHANGE, ROYAL [GRESHAM.]

E. CHEQUER COURT is a superior court of record established by William the Conqueror as part of the Aula Regis, and reduced to its present order by Edward I.

The demand for bills of exchange arises out of the necessity of paying for imports. The supply arises out of the practice of drawing for the amount of exports. If the exporter is not paid in the coin of the country, the purchaser of the goods imported will have to pay in the coin of the country of export. The receipt of goods imported is therefore equivalent for every pound's worth of goods imported there being exactly a pound's worth of export goods to be drawn for—there will be no real exchange: that is, the real exchange, however much the nominal exchange may vary, will be at par.

When, however, the importations are not precisely equal to the exportations, exchange can no longer remain at par. An excess of exportation would cause exchange to advance against the importing country. Let us suppose a case. If, as would sometimes happen, the price of wheat causes the transmission of extensive orders to the north of Europe. This would produce a sudden demand for bills of exchange—not perhaps to the extent of the orders; for in all probability goods-adapted to the market at Amsterdam or Danzig, for example, will only purchase the first article on payment—but, at all events, to a considerable amount. There would accordingly be an advance in the rate of exchange, first on the wheat-shipping ports, and next on all other countries. Thus, England imports wheat from Danzig, and it happens during rises in the price of wheat, that Amster-
dam is at par, as it is also at Amsterdam on Danzig. Hence the wheat-importer would buy a bill on Amsterdam, and with the proceeds would there buy a bill on Danzig. But the buyer of exchange on Amsterdam cannot go into the market, pending an advance in the rate. In this way the advance becomes general.

The real exchange, however, is subject to a limit beyond which it cannot advance. This limit is the cost of transmitting the precious metals. A debtor to a foreign country—say France—causes the transmission of his debt by the trans-shipment of bullion as well as of a bill of exchange; and he will be determined in his choice by the comparative cheapness of either mode. The cost of transmitting specie is, let us assume, 2 per cent.; so long as exchange remains below this rate the debtor will have an incentive to purchase its for the moment the demanders require more than that rate, the exportation of bullion will be resisted to, and bills of exchange will have to be demanded. The cost of transmitting bullion, including the cost of collecting it at the port of shipment, is therefore the limit beyond which the real exchange cannot advance.

But an advance in the rate of exchange, even up to this point, cannot long be maintained. The tendency in an exchange on rising is to check importation and stimulate exportation. Articles which would only just pay with exchange at par would pay a profit sufficient to induce exportation where the exporter could secure 1 or 2 per cent. more for his draft. Thus, by the stimulus to exportation, the supply of goods to the importer is augmented, as a corollary, so that the 

tants to check the advancing rate of exchange. On the other hand, an import article which was only just paying when exchange was at par would cease to pay when it should cost the importer 2 per cent. more to make his remittance. Thus, while the effect of exporting the precious metals is the immediate check upon an advancing rate of exchange, the effect of the real exchange in stimulating or checking importation or exportation, as the case may be, is to work its own remedy. The real exchange is, in fact, continually gravitating towards its mean, though some superior forces may overcome that perpetual tendency.

Most of the errors which preclude in relation to the subject of exchange arise out of confounding the real with the nominal exchange. For the purposes of general reasoning, it is well understood that the advantage of the commerce of the several nations with which we have commercial relations; but for practical purposes the actual par for the moment should be rigidly calculated. Unless this be done, the practical merchant will be liable to continue counting after the conclusion of the transaction. The merchant may consult Mill's Elements of Political Economy, ch. iii. sec. 16, p. 122; Ricardo's Principles, chap. vii., On Foreign Trade; article Exchange in the Ency-

G. EXCHANGE. ROYAL [GRESHAM.]

E. CHEQUER COURT is a superior court of record established by William the Conqueror as part of the Aula Regis, and reduced to its present order by Edward I.
of the barons of the Scotch Exchequer as to the duties and revenues, &c., mentioned in the act have ceased, and are vested in the Commissioners of the Treasury; and the collection and management of the assessed taxes and land-tax of Scotland are transferred to the Commissioners for the Affairs of Scotland, but the judicial powers of the barons are specially saved.

The Court of Exchequer in Ireland was established by the 40th Geo. III. cap. 39, and consists of the chief justices, chief baron, and the rest of the justices and barons, or any nine of them.

EXCHEQUER BILLS form the principal part of the unfunded public debt of this country. These bills are issued under the authority of parliament for sums varying from 100L. to 1000L. and bear interest. They were first issued in 1773, and, in the first instance, the rate of interest has varied at different times, the conveniences which they afford to individuals and their advantage to the public have been such as to cause their constant issue. Their convenience to individuals arises from the circumstances of their being free from and having the necessity of making a formal transferral, of their bearing interest, and of their not being subject to such violent fluctuations as sometimes occur in the prices of the funded debt. This comparative steadiness in value is caused by the option given by them to the holders of the bills to receive the same at par, or to exchange them for new bills to which the same advantage is extended; besides this, when a certain limited period has elapsed from the date of their issue, they may be paid to the government at par in distant places, and at a premium. The amount of premium which may have been paid at the time of purchase is consequently all that the holder of an exchequer bill risks in return for the interest which accrues during the time that it remains in his possession. The advantage to the public consists in the rate of interest which they carry compared with the permanent or funded debt of the nation, to which, however, they must in this respect bear some certain proportion. When the price of the public funds is high, the interest on the proceeds of the revenue is more than sufficient to pay the premium, and thereby maintain the financial operations of government. When first issued in the reign of William III., the interest borne by exchequer bills was 5d. per 100L. per diem, being at the rate of 7L. 12s. 1d. per cent. per annum. In the same reign the rate was reduced to 6d. per cent. per annum, and in the following reign the rate was still further reduced to 2d. per diem, or 3d. 9s. 6d. per cent. per annum. During the greater part of the war from 1793 to 1814, the rate of interest was increased to 5d. per cent. per annum, and in the last-mentioned year the rate has been progressively reduced to 4d., 3d., and 2d. per 100L. per diem, at which rate they were in the market at the time of the derangement of the currency which was experienced in the beginning of 1837. Under these circumstances, it was considered important as far as possible to relieve the Bank of England, by which establishment a very large proportion of these securities were then held, and to place it in the most favourable position. Therefore, as the public were already disposed to bear a high premium on London bills, and the rate of interest on exchequer bills was raised to 2½d. per cent. per diem, at which rate they are still current (August, 1837), although the high premium which they bear in the market—4½s. per cent.—leads to the supposition that it will be soon again reduced.

In periods of commercial pressure, arising from causes which are believed to be temporary, it has sometimes been considered advisable by parliament to make advances to merchants and traders on condition of their paying the interest of the money advanced, and the produce of the goods upon which it was advanced, and in case of non-payment the seizure and sale of the goods, &c. In these cases the rate of interest charged to the borrowers is somewhat greater than that borne by the bills, and the difference has been applied to defray the expense of management on the part of the public.

The amount of exchequer bills 'outstanding and unprovided for' at the end of each of the last ten years was as follows:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1827</td>
<td>£2,646,850</td>
</tr>
<tr>
<td>1828</td>
<td>£2,567,000</td>
</tr>
<tr>
<td>1829</td>
<td>£2,490,550</td>
</tr>
<tr>
<td>1830</td>
<td>£2,549,650</td>
</tr>
<tr>
<td>1831</td>
<td>£2,551,350</td>
</tr>
</tbody>
</table>

EXCISE DUTIES, the name given to taxes or duties levied upon articles of consumption which are produced within the kingdom. This description, which has usually been given of duties imposed by the crown, is, more correctly applicable now than it was formerly, when the commissioners of the customs revenue were also charged with the collection of duties upon various articles imported from foreign countries. Among these foreign articles were wine, spirits, tobacco, excise duties, for which, however, no taxes were imposed. This last duty was withdrawn from the management of the Excisemen and transferred to the Board of Customs. Thereo are still, it is true, certain duties to which the name of excise is applied which can hardly be called duties upon consumption, as though they are necessary to the state in such duties as the duty on sales by auction and the sums charged for licenses to permit parties to carry on certain trades.

Excise duties are said to have had their origin in this country in the reign of Charles I., when a tax was laid upon beer, cider, and wine; but these duties were afterwards, by which these duties were authorised was passed by the long parliament in 1643. This act contains also a list of foreign articles, and among others tobacco, wine, raisins, currants, and molasses, upon which excise duties were imposed in addition to duties of customs. This act was adopted and enforced under the protectorate of Oliver Cromwell; and by the statute 12 Charles II. c. 34, the duties of excise were granted as a permanent charge.

For a long time this class of duties was viewed with particular dislike by the people, on account of its inquisitorial interference with various industrial pursuits, and it certainly forms a very strong ground of objection against excise duties, as the certainty of the revenue which they yield is held to be incompatible with the perfect freedom of the manufacturer as to the processes which he may apply in his trades. In every highly-taxed country where consumption duties form part of the public revenue it would be difficult to find a manufacturer who would be willing to adopt this class of duties. If, taking for our example an industry which is now exercising an injurious effect in a neighbouring country, it is found expedient to impose a customs' duty upon the consumption of foreign-made sugar, it is clearly inconsistent, and even suicidal, for the domestic manufacturer to be allowed to be imposed upon sugar of domestic production, otherwise the community at large is made to bear the load twice, once in the form of some other tax, and again to the producer of indigenous sugar, who will charge the consumer nearly as much as he would pay to the importer of foreign sugar, including the amount of the duty. By such means a branch of industry would be fostered, unprofitable to the country at large, and profitable only to the few persons by whom the indigenous sugar is produced, but whose production is, after all, unprofitable to the country as a whole. If, on the other hand, the duty should be imposed upon sugar of domestic production, otherwise the community at large is made to bear the load twice, once in the form of some other tax, and again to the producer of indigenous sugar, who will charge the consumer nearly as much as he would pay to the importer of foreign sugar.
extent to which this interference is injurious, if we state, on the authority of a gentleman conversant with all the details of the art of calico-printing, that upon the same premises, when the same amount of labour is employed, double the quantity of cloths are now printed which could have been printed previous to the repeal of the duty, and to the consequent withdrawal of the excise-officers from the works. Another great objection that may be urged against excise duties is, the facility with which they offer for the commission of frauds against the revenue, an offence which, in the eyes of many persons, is of a venial kind, but which too often ultimately demoralizes those by whom it is committed. In the Seventeenth Report of the Commissioners appointed to inquire into the management and collection of the excise revenue it is stated as a striking proof of the extent to which frauds are committed by manufacturers of soap, that there are in England fifty that take out licenses, for which they pay 4l. per annum, each of which makes, or rather brings to charge, less than one ton of soap per annum, from which it is obvious that the profits of such a sale would not pay for the license, the entry is made in order to cover smuggling. With regard to malt, another article subject to excise duties, the commissioners state it to be their opinion, founded upon the evidence given by several respectable maltsters, "that malt is sold throughout the season, and in large quantities, for a price that is insufficient to pay the expense of making it and duty; and that the duty is evaded to a great amount." A strong presumptive evidence to this effect is contained in the fact that the average number of bushels of malt brought to charge in each of the ten years from 1725 to 1734 was 26,117,330, while in the ten years from 1802 to 1812, that is, after the lapse of a century, the number of bushels so brought to charge was 29,572,380; although during that time the population had been more than doubled, and the habits of the people not altered in any way that should lead to the supposition of any increased consumption of the products of malt.

The articles now subject to excise duty are:—auctions; bricks; glass; hops; licenses; malt; paper; soap; spirits (British); vinegar.

In addition to the foregoing excise duties, were collected in 1792, under the following heads: viz.; "starch; * stone bottles; * nuts and meal; tea; * tills; * candles; * coaches; cocoa; coffee; * cider; * hides and skins; pepper; * printed goods; * salt; spirita (foreign); tobacco and snuff; * wine; *.

Of these nineteen articles the duties have been repealed upon the twelve to which an asterisk is prefixed; the collection of duties on the remaining seven articles has been transferred to the Customs department.

The following table states the amount of payments made into the Exchequer on account of excise duties in England, the charges of collection and the rate per cent. on the collection calculated on the gross revenue in each year from 1797 to 1835.

<table>
<thead>
<tr>
<th>England</th>
<th>Scotland</th>
<th>Ireland</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>£</td>
<td>£</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>1797</td>
<td>215,171</td>
<td>2,000</td>
<td>19,766</td>
</tr>
<tr>
<td>1798</td>
<td>305,070</td>
<td>8,945</td>
<td>11,744</td>
</tr>
</tbody>
</table>
| 1799 | 921,544 | 39,554 | 4,2
| 1800 | 333,562 | 36 |
| 1801 | 647,229 | 124,959 |
| 1802 | 4,291,400 | 548,147 | 1,269,209 |
| 1803 | 742,101 | 96,125 |
| 1804 | 691,647 | 82,451 |
| 1805 | 2,155,531 | 146,514 |
| 1806 | 53,721 | 4,072 |
| 1807 | 25,875 | 22,128 | 408 |
| 1808 | 10,849,579 | 2,418,063 |
| 1809 | 1,003,897 | 98,712 |
| 1810 | 494,382 | 11,980 |
| 1811 | 877,218 | 1,091 |
| 1812 | 2,915,531 | 14,836 |
| 1813 | 15,299,351 |

The gross and net receipt, charges of management, and the rate per cent. for which the gross revenue of excise in England, Scotland, and Ireland respectively, were collected, for the year 1835, were as follows:

<table>
<thead>
<tr>
<th>Gross Receipt</th>
<th>Net Receipt</th>
<th>Charges of Management</th>
<th>Rate per cent. for which the Revenue was collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>£</td>
<td>£</td>
<td>£</td>
<td>%</td>
</tr>
<tr>
<td>England</td>
<td>10,861,182</td>
<td>10,252,486</td>
<td>736,826</td>
</tr>
<tr>
<td>Scotland</td>
<td>2,456,705</td>
<td>2,232,961</td>
<td>150,530</td>
</tr>
<tr>
<td>Ireland</td>
<td>1,911,464</td>
<td>1,906,150</td>
<td>183,049</td>
</tr>
</tbody>
</table>

The gross receipt, as stated in the foregoing abstract, was collected on the different articles subject to excise duties in the following proportions:

<table>
<thead>
<tr>
<th>England</th>
<th>Scotland</th>
<th>Ireland</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>£</td>
<td>£</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>1797</td>
<td>17,766</td>
<td>9,768</td>
<td>2,943</td>
</tr>
<tr>
<td>1798</td>
<td>17,744</td>
<td>1,092</td>
<td></td>
</tr>
<tr>
<td>1799</td>
<td>39,554</td>
<td>4,2</td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1801</td>
<td>124,959</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1802</td>
<td>548,147</td>
<td>1,269,209</td>
<td></td>
</tr>
<tr>
<td>1803</td>
<td>96,125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1804</td>
<td>82,451</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1805</td>
<td>146,514</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1806</td>
<td>4,072</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1807</td>
<td>22,128</td>
<td>408</td>
<td></td>
</tr>
<tr>
<td>1808</td>
<td>2,418,063</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1809</td>
<td>98,712</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>11,980</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td>1,091</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1812</td>
<td>14,836</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1813</td>
<td>15,299,351</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The estimated amount of excise duties repealed since 1824 is 6,782,000l, and the amount of those, the management of which has been transferred to the Customs, is 11,238,300l. The rates of excise duties at present chargeable in England, Scotland, and Ireland respectively, are as follows:
The number of traders who were obliged to take out excise licenses in 1835, or whose premises were subject to visits from the excise officers, in England, Scotland, and Ireland respectively, was:

<table>
<thead>
<tr>
<th>品名</th>
<th>英格兰</th>
<th>苏格兰</th>
<th>爱尔兰</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beer for sale, vis</td>
<td>41,918</td>
<td>561</td>
<td>936</td>
</tr>
<tr>
<td>Whisky</td>
<td>19,693</td>
<td>1,172</td>
<td>948</td>
</tr>
<tr>
<td>Spirits</td>
<td>25,156</td>
<td>1,075</td>
<td>193</td>
</tr>
<tr>
<td>Brick-makers</td>
<td>6,711</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Glass-makers</td>
<td>444</td>
<td>47</td>
<td>57</td>
</tr>
<tr>
<td>Statemakers</td>
<td>1,824</td>
<td>51</td>
<td>23</td>
</tr>
<tr>
<td>Wood-carvers</td>
<td>78</td>
<td>1,263</td>
<td></td>
</tr>
<tr>
<td>Tobacco-manufacturers</td>
<td>70,181</td>
<td>15,000</td>
<td>12,203</td>
</tr>
<tr>
<td>Glass-polishers</td>
<td>56</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Quay-makers</td>
<td>70</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Reciters</td>
<td>25</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Pyroxylic acid makers</td>
<td>908</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Reciters</td>
<td>182</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Tobacco and snuff manufacturers</td>
<td>200</td>
<td>151</td>
<td>191</td>
</tr>
<tr>
<td>Tallow-cottoners, milled, &amp;c.</td>
<td>1,727</td>
<td>989</td>
<td>237</td>
</tr>
<tr>
<td>Wax-makers</td>
<td>86</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Coke and pyroxylic acid makers</td>
<td>24</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sandadealers</td>
<td>2,074</td>
<td>257</td>
<td></td>
</tr>
<tr>
<td>Salt-makers</td>
<td>20</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Card-makers</td>
<td>20</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>University printers</td>
<td>10,064</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>Iron-must makers</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dyers in braid</td>
<td>8,098</td>
<td>98</td>
<td>81</td>
</tr>
<tr>
<td>Wine</td>
<td>1,812</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Tea</td>
<td>70,181</td>
<td>15,000</td>
<td>12,203</td>
</tr>
<tr>
<td>Vinegar</td>
<td>12,650</td>
<td>2,030</td>
<td>3,019</td>
</tr>
<tr>
<td>Spirits-dealers who had sales</td>
<td>1,049</td>
<td>318</td>
<td></td>
</tr>
<tr>
<td>Retailers of spirits</td>
<td>42,284</td>
<td>16,301</td>
<td>12,203</td>
</tr>
<tr>
<td>Wines</td>
<td>18,193</td>
<td>8,297</td>
<td>7,672</td>
</tr>
<tr>
<td>Sweets</td>
<td>556</td>
<td>28</td>
<td>38</td>
</tr>
<tr>
<td>Beer-dealers</td>
<td>905</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td>Retailers of beer, elder, &amp;c. to be broken on the premises</td>
<td>35,721</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Corvantes</td>
<td>1,000</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

The management of a branch of the revenue which is collected in every part of the kingdom necessarily gives employment to a great number of officers. The numbers so employed in England, Scotland, and Ireland, and the amount of their salaries at different periods, were as follows:

<table>
<thead>
<tr>
<th>品名</th>
<th>英格兰</th>
<th>苏格兰</th>
<th>爱尔兰</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years</td>
<td>No. Salaries</td>
<td>No. Salaries</td>
<td>No. Salaries</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1870</td>
<td>1,695</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1871</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1872</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1873</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1874</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1875</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1876</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1877</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1878</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1879</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
<tr>
<td>1880</td>
<td>2,077</td>
<td>9,427</td>
<td>2,081</td>
</tr>
</tbody>
</table>

**EXCITAMENTS. [Simulants.**

**EXCOMMUNICATION,** from *Excommunicatus,* is the highest ecclesiastical censure which can be pronounced by a spiritual judge. The person against whom it is pronounced is for the time being excluded from the communion of the church. This punishment, as well as many others, springing from ecclesiastical jurisdiction, according to some opinions, had its origin in the advice given by St. Paul when reproving the early Christians for scandalizing their profession by professed lawsuits against each other before heathen judges; and the apostle accordingly recommended them to leave all matters in dispute between them to the decision of the Ecclesia, or the congregation by the faithful. This advice was soon followed, and heathen tribunals were afterwards occupied by the controversies of the Christians.

The bishop and his clergy, and afterwards the bishop alone, became sole judge in these disputes; but possessing no coercive power to enforce their decrees, they were obliged to adopt the meanest measures by which they could make themselves, to bring the refractory to submission, namely, by excluding them from the rites of the Church, and warning other Christians from their company and presence. A Christian thus shut out from the fellowship of his own brethren could not do otherwise than to obey them.

This censure, although instituted by the primitive church as the means of preserving its purity and of enforcing obedience to its just laws, was afterwards used for the propagation of ecclesiastical power, and was erected into one of the greatest oppressions in those countries which were most subject to ecclesiastical rule. (Roberts's *History of Charles V.*, vol. ii. p. 109.)

In England excommunication became at a very early period the instrument of government under the hands of the bishops, and others possessing ecclesiastical jurisdiction. It was divided into the greater and the less excommunication. The latter only removed the person from a participation in the sacraments, and is what was most commonly meant by the term excommunication; the former was called annulla, and not only removed the party from the sacraments, but from the Church and all communication with the faithful, and even deprived him of Christian burial. Subjects were absolved from their allegiance to an excommunicated bishop, and were not bound to obey him. Gregory V. was the first prelate who ventured to excommunicate a reigning prince in the case of Robert, king of France, in 998. John and Henry VIII. are well-known instances in English history. The latest instance of all was Napoleon, in 1809, by Pius VII.

Excommunication sometimes followed immediately upon the commission of an offense, and was then called canonical, to distinguish it from that which did not depend upon any established canon, but upon the sentence of a judge.

The following is a list of the persons who received censure from the first lay hands; notorious offenders; those who talked with, saluted, or sat at the same table with, or gave anything in charity to persons excommunicated by the greater excommunication, unless by the latter:

Excommunication was also pronounced for other matters which belong to ecclesiastical jurisdiction, as adultery, incontinence, fornication, &c., or for contempt of any ecclesiastical order or sentence. A sentence of excommunication was pronounced by three monastics at three intervals, or one peremptory, containing the legal space of time, with a proper regard to the quality of the person and the nature of the offence. But, as Blackmore remarks, 'heavy as the penalty of excommunication is, considered in a spiritual point of view, it has not the same terrors as the temporal. Many obstinate or profligate men, who would despise the *brutum fulmen* of more ecclesiastical censures, especially when pronounced by a petty surrogate in the country, for railing or contemptuous words, for non-payment of fees or rents or other pecuniary expences, 'tis the common law of nations to compeasibly steps to it the aid of the ecclesiastical jurisdiction, and kindly lends a supporting hand to an other-tittering authority.' This was effected by the writ *do...*
EXE

excommunicato capiendo,' or for seizing the excommunicate. But before the writ for taking the excommunicated person could be granted the contumacy and contempt of the party were to be certified by the bishop to the court of Chancery by letter or for his seal, 5 Eliz., c. 177, and the writ was not returnable to the King's Bench. By the statute just cited the cause of excommunication was to be stated in the writ, in order that the court might judge as to the justice of the case. The sentence of excommunication might be revoked by the judge who passed the sentence, or upon appeal the party might be absolved. Absolution generally belonged to the same person who passed the sentence, unless in some particular cases, which were referred to the pope or a bishop. (Roeves Hist. of English Law; Sulivan's Lexicon of Law.)

By a sentence of excommunication, both greater and less, those denounced were excluded from the right of Christian burial, from bringing or maintaining actions, from becoming attorneys or jurymen, and were rendered incapable of receiving the king's superior courts at Westminster, the Geo. III. c. 157, excommunication cannot now be pronounced in England, except in certain cases (as spiritual censures for offences of ecclesiastical cognizance); and by the 3rd section of that statute 'no person who shall be pronounced or declared excommunicate (pertinent to the second clause of this statute) shall incur any civil penalty or incapacity, in consequence of such excommunication, save such imprisonment, not exceeding six months, as the court pronouncing or declaring such person excommunicate shall direct.' The proceedings in such cases, with which excommunication may still be pronounced, are the same, as to the issuing and return of the writ, as they were before the act of 53 George III. By the same act (53 George III. c. 127), in all cases cognizable by the laws of England in ecclesiastical courts, when any property is in dispute, to appear in such cases the party shall refuse to obey the lawful order or decree of such court, no sentence of excommunication, except in the cases above alluded to, shall be pronounced; but a writ 'de contumacia capiendo' shall issue, which in effect is the same as the old writ 'de custodia capiendo.' Thus the various difficulties are now obviated which formerly existed in courts of law with respect to excommunication.

EXECUTION is the effect given to the judgments and other proceedings analogous to judgments of courts of law and in civil suits. This term denotes the process by which a party is put into the actual possession of that to which by the proceedings of a court he appears to be legally entitled. As a judgment of a court of common law ascents that the party to the possession of some subject of a real or personal nature; or to receive property withheld or injuries done, so the execution founded upon such judgment will be framed with a view to putting the party in whose favour the judgment is given either in the actual possession of the thing in dispute, or to enable him to obtain pecuniary compensation.

For this purpose a written command issues in the name of the king or other lord or owner of the court, to an officer of the court: when the judgment is in one of the king's superior courts at Westminster, the Geo. III. c. 157, the sheriff is to be seized of the county in which the property is situate, or, in the case of pecuniary compensation, the sheriff of the county in which the party from whom such compensation is due is supposed to reside; whereas in other cases it is supposed to be the county in which the litigation was carried on.

Where lands or other corporeal hereditaments are recovered, the process of execution varies according to the nature of the interest recovered. If a right to a freehold interest is in dispute, the writ will be directed to the sheriff to give the receiver seisin of the land, &c., and is called habere facias seisinam. (Habere Facias Seisinam.) If a chattel interest only is recovered, the writ does not affect the right to possess the chattel itself, but only to take possession of the land, &c., it is called habere facias seisinam. (Habere Facias Possessionem.)

A judgment in an action of detinue (Ditinum) establishes the right of the receiver to the possession of a specific chattel, and the recovery of the disputed ad delinbam issues, requiring the sheriff to seize the chattel of the defendant by his directions (distress) to restore the specific chattel or its value.

A judgment for the defendant in replevin (Replevin) establishes his right to the possession of the personal chattel which formed the subject of the litigation. In the ordinary case of an action of replevin after a distress, the right of the defendant in respect of the chattel distrained is merely to obtain the return of the chattel, the payment or performance of which is sought to be enforced by the coercion of a distress. [DISTRESS.] The writ of execution requires the sheriff to seize the chattel to be restored to the possession of the defendant. This is called a writ de remis habendo, and in case the sheriff fails to find the chattel, further process issues commanding him to take other chattels of the plaintiff as a substitute for that which is withheld, by a writ called a capias in reversion.

The most ordinary cases of execution are those in which pecuniary compensation is recovered; and if in those cases the sheriff is not authorized directly to take money from the party by whom it is to be paid. Formerly the only mode of obtaining this compensation was by process of distresses or distress. And this is still the case in inferior courts of common law, and also in the admiralty. No other records establishing pecuniary claims may be had by a writ of fieri facias (Fieri Facias) affecting the personal property; by writ of elegies (Elegies) affecting both real and personal property; and by capias ad satisfaciendum (Capias), by which compliance with the pecuniary demand is enforced by detention of the person of the defaulter in prison until the claim be satisfied, or the adverse party consents to his discharge.

A subject is not entitled to pursue all these remedies at once. The main object is to obtain satisfaction from the goods, lands, and person of his debtor, if he can be enforced simultaneously, by writ of capias, and extend facias, or extent. [EXTENT.]

EXECUTION is also the term applied to the giving effect to the decision of a court of criminal jurisdiction. In this sense it is most commonly used with reference to the execution of sentence of death. [Sheriff.] EXECUTOR. An executor is he to whom another man commits by will the execution of that part of his last will and testament which affects the personal estate. His power is by the law, if not by a will uncertain to be executed, by his executors, or, if an executor is named, by the court of Probate. An executor administers the estate as if he were the agent of the deceased, and if the estate is revenue, his power is entirely concurrent with that of the county or borough where the real estate is situated. If the estate be invested in money, the executor may invest it in whatever manner he chooses; but if the estate is invested in real property, or in the same hands, he may not mortgage or sell any part of it without the consent of the court. The executor may take personal property, and may sell it for the benefit of the estate, and may employ his own or any other person's counsel or attorney in the execution of his duty. If the executor shall die, or be unable to act, the estate vests in his heirs or assigns as if he had acted, and the court of Probate has the power to appoint a proper administrator to take possession of the estate, and to deal with it in all respects as if it had vested in the hands of the estate administrator. The executor may take personal property, and may sell it for the benefit of the estate, and may employ his own or any other person's counsel or attorney in the execution of his duty. If the executor shall die, or be unable to act, the estate vests in his heirs or assigns as if he had acted, and the court of Probate has the power to appoint a proper administrator to take possession of the estate, and to deal with it in all respects as if it had vested in the hands of the estate administrator.
If a stranger takes upon himself to act as executor without any authority, as by intermeddling with the goods of the deceased, he is called an executor de son tort (of his own wrong), and is liable to all the trouble of an executor without any of the advantages attached to the office. He is answerable with the debts of the deceased, no less as executor, if he come to his hands; and is liable not only to an action by the rightful executor or administrator, but also to be sued an executor of the deceased by his creditors and legatees. The only advantage which an executor derives from his office is the right of effecting a settlement of accounts between the testator, as against creditors of equal degree, and this privilege is allowed him, because he cannot take any legal steps to recover payment. This, though practically a privilege, is really only a provision of the law that he shall not be prevented from discharging his duties as executor, all the other creditors would, by instituting a suit against the executor, gain priority over him in respect of their debts.

The duties of executors and administrators are, in general, the same, the only essential difference between them being, as before mentioned, the mode of their appointment. Their duties are to bury the deceased, to prove his will in the proper Ecclesiastical Court, to collect and get in his goods and chattels, to pay his debts in the order prescribed by law, and also his legacies, if he has bequeathed any, and dispose of the residue of his goods and chattels in the manner by the will directed, or according to the statutes as to the distribution of the effects of intestates, if there should be no will. Executors or administrators are liable to an action at law, and also to a suit in equity, for the payment of the debts and liabilities of their testator or intestate; and to a suit in equity and the Ecclesiastical Court for the legacies bequeathed by him, and the administration of his estate: but no action at law lies for a legacy, at least not until after the executor has assented to it, as is called, that is, has acknowledged the sufficiency of the assets after providing for the payment of the debts.

It appears to have been a subject of much controversy whether the probate of wills was originally a matter of exclusive ecclesiastical jurisdiction, but whatever may have been the case in earlier times, it is certain that at this day the Ecclesiastical Courts are the only courts in which, except by special prescription, the validity of wills of personality can be established or disputed. If all the goods of the deceased lie in the diocese or jurisdiction within which he held the probate is made before the bishop or ordinary of the diocese or jurisdiction; but if he had bona notabilia in the jurisdiction of another diocese or jurisdiction, and the probate is not made before the ecclesiastical court of the province or metropolis of the diocese, if within sixty days of the death the will is proved before the archbishop or metropolis of the province by special prerogative; and if there be no bona notabilia in different provinces, there must be an interlocutory court of the province, which was discharged within six months after the death of the testator, or within two months after the termination of any dispute respecting the probate. (See 56 Geo. III. c. 184, sec. 57.)

 Executors and administrators are treated by the courts of equity as trustees for the creditors, legatees, and next of kin of their testators or intestates. They are bound to administer the assets according to their due order of apportioning and paying the debts of the deceased in like manner as other persons. Executors and administrators are liable in suits for the payment of debts or legacies and the due administration of the assets, yet, where there is any trust to be executed, or any charge on real estate to be established, suits of equity will interfere by injunction or prohibition; but when the executors or administrators have been adapted to the administration of trusts, and over real estate have no jurisdiction. The probate is exclusive evidence of a will of personality; but courts of equity assume the jurisdiction of construing the will in order to enforce the effects of the provisions. The wills of persons who are sometimes styled courts of construction, in contradistinction to the ecclesiastical courts, which, although they also are courts of construction, are the only courts of probate. Formerly, the personal estates only of persons of a particular denomination were administered by courts of probate; but now, since the statutes 3 and 4 Will. IV. c. 184, real estates are liable for the payment of debts of both natures; and it may be broadly stated that all the real and personal estates of the deceased are assets for the payment of his debts. The personal estate is liable in the first instance, unless the testator directs otherwise. Estates descended are applied before estates devised; and in other respects the estates of the deceased are administered in the order laid down by the courts.

The debts are also paid in a certain prescribed order. 1. The funeral expenses, the expenses of probate, and the costs of a suit for the administration of the estates, if any be instituted. 2. Debts due to the crown on record or specialty. 3. Certain debts, which by statute are to be preferred to others, are paid first. (See sec. 4.) Debts of record, as judgments, statutes, and recognizances. 5. Speciality debts, i.e. debts due on bonds or instruments under seal. 6. Simple contract debts, as upon bills of exchange and ordinary verbal engagements. It will be observed that debts due to the crown and the wages of domestic servants are entitled to priority.

A mortgage made by the testator must, if there be no specified direction in his will, be paid out of the personal assets, if there be sufficient to pay the other creditors and legatees, or, if not, in the next order; and the prescriptive debt of the testator: though, if he did not create the mortgage himself, but took the estate subject to the mortgage by purchase, inheritance, or devise, the debt, not being his personal engagement, is borne by the personal assets. The executor must pay the debts in the order mentioned; for if he apply the assets in payment of those of a lower degree, he will be personally answerable, to the extent of the assets misapplied, to the creditor of the higher degree. He may, if there be more than one testator, pay a debt due to one of a lower degree, before one of a superior, provided he has no notice of the latter and a reasonable time has elapsed after the testator's death; except in the case of debts of record due to the crown, of which the executor is bound to take notice. An executor or administrator may also retain his own debt as against creditors of an equal degree; and he may pay any one or more debts to creditors of equal degree, although thereby he may exhaust the assets, unless a suit or action be commenced against him; and even in that case he may, by confessing a judgment, enable himself to retain the priority. But notwithstanding an action or suit be commenced, he may pay a creditor of a higher degree than the one proceeding against him; save only where the suit is for a general administration of the estate, when the executor should not make such a payment.

The debts being all paid, the next duty of an executor or administrator is to pay the legacies, and distribute the personal estate to the next of kin of the testator if there be any overplus, but where the testator has made a residuary testamentary disposition, the legacies are insufficient for the payment of the legacies, the executor must pay to each legatee an equal proportion of his legacy, unless the testator has directed the order of payment, in which case the legacies must be paid in full in the prescribed order. If the whole of the assets are insufficient to pay the legacies, the executor may pay the personal effects first, and divide among the legatees, i.e. persons to whom a specific fund or article of property is given by the will, are not liable to abatement of their legacies, but receive the fund or article whether the assets are or are not sufficient to pay the other legatees; though if the funds charged, or the assets sold, de from any other cause is not in existence at the death of the testator, the legacy fails, or in technical language, is said to be apportioned. Executors and administrators cannot be compelled to pay legacies on or after the expiration of a year after the death of the testator; and not even, if notice has been acquired or there is reasonable ground to suspect the existence of debts and liabilities. Indeed, unless the assets are of a sufficient amount, the executor should not make any payment within the year, even though the testator has directed it to be done; for it has been held that such a payment affords no defence against a creditor, and the testator or intestate may be bound by covenants upon which subsequent liabilities may be based, or he may have taken a mortgage or some maladministration of the trust estate may be discovered after the lapse of many years. In these and many other cases, executors and administrators should not part with the assets until all chance of liability is at an end, or until they are put on a sounder foundation, or a strong case of surety has been prepared in case of need. This last course will sometimes be directed by a court of equity in a suit for a legacy; for though an executor or administrator may recover from the legatees or next of kin to whom he has handed over the assets in
case of subsequently-discovered debts of the deceased, it is obvious that this is a very insufficient and uncertain security. Where a legatee is an infant, or the testator has directed his executors to invest any portion of his estate in the funds, or has provided for some future payment to be made, or from any other cause, an investment is the express direction of the testator, and, in the absence of any express direction to the contrary, bound to make such investment in the Three per Cent. Consols, that fund being considered by the Court of Chancery as the most desirable for the purpose of investment. The rule is inapplicable, and an executor, who should disregard it would run great risk of having to pay the costs of a suit to compel him to place the money in that fund, and to make good any loss which might occur through the change of securities.

For information on these subjects will be found in the works of Williams, and Toler ‘On Executors,’ and Wentworth ‘On Administrators.’

EXE’DRA (ἐξεδρα), a name given to certain open recesses in the buildings of the ancients. There were numerous excavations in the baths. Vitruvius says the various excava-
tions of the Greek palaces were furnished with seats. The excavations were placed in the three portions of the palace. (Vitruvius, v. c. 9.) Sometimes in houses a covered hall, and of a square form, was called exedra. (Vitruvius, vi. c. 8.) A recess in the position of the old gallery above the excavations were placed looking to the west. (Vitruvius, vi. cap. x.)

EXERCISE. [Analectic.] EXETER, a city and a county itself, locally, in the hundred of Womford, in the southern division of the county of Devon, is the chief city of the county; is 14 miles north-east from Plymouth, and 174 west by south from London. Exeter is supposed to have been a settlement of the Britons before the Roman invasion. It was then called ‘Caer-Les’ and ‘Caer Rythl; the former derived from its situation on the Exe, by the bank of the river, the castle which is built by. The Romans it was called Isca Dumonium, to distinguish it from the Ica Silurum in Wales. From the number of coins, small bronze statues (evidently Penates), te-related pavements, and other Roman antiquities discovered near the walls and in the neighbour-
hood of the city, it must have been a Roman station of some importance. It is uncertain how long Exeter retained its appellation of Isca Dumonium, but in the reign of Alfred it had acquired that of Exon-Castre (castle on the Exe), where its present name.

In the reign of King Stephen, Baldwin Rivers, earl of Devon, fortified Exeter on behalf of the Empress Maud, and did not yield till reduced by famine after a long siege. It was besieged in the 12th year of the reign of Henry VII. by Percivall again by the rabble of Devonshire and Corkhill in 1549.

The city of Exeter was formerly surrounded by walls and strongly fortified. Leland, in speaking of it, says, ‘The town is a great city, and more 6000 people, and the walls are very strong and maintain the. There be diverse far	owers in the town wall wittwixt the south and west gate. There be four gates in the town, by names of Est, West, North, and South. The Est and the West Gates be now the nearest, and of one fashion of building: the South Gate hath been the strongest.’ Situated on a high eminence, on the north side of the town, are the ruins of the castle, called ‘Rougemont.’ When this castle was first erected is unknown; but it was either rebuilt or much repaired by William de Brocas, the lord, who became Duke of Bruns, husband of Albina his niece, in the possession of whose descendants it remained till the 14th year of the reign of Henry III., who then took it into his own hands. It was completely dismantled during the civil war, and has never since been built. In the area of the castle-yard a session-house has lately been erected, which is a neat-looking building, faced with Portland stone, and contains, in addition to two good-sized courts, a grand-jury room, magis-
trates’ room, &c. In front is a fine open space, where concerts and other meetings are held. The north of the castle is a delightful walk, shaded by fine old elm trees, called Northernay. Near the centre of Exeter is the guildhall, where the assizes for the city (which is a county of itself) are held, as well as the sessions, elec-
tions, and other business relative to the city alone. The building contains several valuable portraits, amongst others, those of Henrietta Maria, Charles the First’s queen, her daughter Henrietta duchess of Orleans, and of General Monk. The only other ancient building of any importance at Exeter is the cathedral. It is uncertain when the pre-
ent edifice was begun, but probably it was soon after the see of Devon was transferred to Exeter from Crediton, which was its locality till the year 1349. At all events it was con-
structed on a large scale by Bishop Wordsworth who was a Normain, and came over with the Conqueror. It then assumed its present cruciform shape, but underwent numberless alterations and additions during the thirteenth and fourteenth centuries. It now consists of a nave, 76 feet in width, and 175 in length, with aisles on each side; two short transepts, formed by two Norman towers 130 feet in height; a choir of the same width as the nave, and 128 feet in length: ten chapels or oratories, and a chapter-house. The whole building from east to west includes more than 1000 feet. The western front is highly decorated with a profusion of niches and elegantly carved figures, and pre-ents one of the richest

facades of any building in Europe. The towers are highly interesting to the antiquary as specimens of Norman archi-
tecture. The interior is also exceedingly fine; the vaulted roof of the nave is supported by clustered columns, sur-
rounded by fine pointed arches; as is also that of the choir, which is separated from the nave by a screen of exquisite workmanship. The chapter-house is a beautiful edifice. It is beautifully adorned by turrets and spires, and by statues of the most eminent bishops and men of war, both Englishmen and Normains. The Western front is highly decorated with a profusion of niches and elegantly carved figures, and presents one of the richest

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is a subscription library in Fore Street; and in 1813 the Devon and Exeter Institution was founded, for the promotion of arts, &c., the library of which contains about 10,000 volumes. In 1815 the Post and Mail Establishment was formed. The north of the city is the cavalry barracks, and very near there is the new bridewell and the county gaol, both of which are judiciously planned, and contain the governor's residence, chapel, &c. There is also a city prison.

The town has been selected by the state as a market, and a number of fairs are held on the third Wednesdays in February and May, the last Wednesday in July, and second Wednesday in December. There is a great horse fair held at Alphington, about one mile from Exeter.

In the spring of certain years, places and persons there is a remarkable difference between the two records. Richetona, in the Exon Domeday, fol. 101, is Chichetone in the Great Domeday, tom. i., fol. 120. Modifora, Exon, fol. 116, is Mundifora in Domeday, tom. i., fol. 87. Pillanda, Exon, fol. 127 b, is Welland, Domeday, tom. i., fol. 102 b. Illebera, Exon, fol. 139 b, is Lillichares, Domeday, tom. i., fol. 88. There are also many observable differences in the names of persons, as Ulwardus, mentioned in the Exon Domeday, fol. 116, is Vivardus Albus in Domeday, fol. 118; the name of a battle in Sussex is called Abbas de Prelio in the Exon Domeday, fol. 195; but in the Exchequer Domeday, Exahs de Lahaltale, Abbas de Alennia, Exon, fol. 380, is Abbatia de Adelingia in Domeday. Adret, Exon, fol. 391, is also held by the Bishop of Exeter. The number of freemen in the last column is placed as 10,000, but it is fairly assumed that this number is too low, as the number of freemen entered in the Exon Domeday, in 1274, was 280, which is the number of freemen considered to be the actual number of freemen in the town.

The most striking feature however of the Exeter Domeday, in which it uniformly supplies us with additional knowledge to that in the Exchequer Survey, is the enumeration of live stock upon every estate; there is an account of the number of oxen, sheep, goats, horses, alms, in the same manner as it is given in the second volume of the Great Domeday. The reason for omitting this enumeration in the hitherto existing entries of the first volume of the Great Survey is self-evident. The live stock was altering every day and year; the enumeration of it therefore could be of no further use than for the exact time when the survey was made. A comparison of this part of the Exeter with the second volume of the Great Survey tends greatly to corroborate the notion that the returns of the counties of Essex, Norfolk, and Suffolk, were not included in the fourth edition of the Great Survey, but simply added to the text, in the same manner as the Exeter Domeday. The difference between the two surveys as to dictio, when they agree in sense, is likewise remarkable; as for instance,

### Exchequer Domeday.

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<td>ad arsaram</td>
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<tr>
<td>censors</td>
<td>galilatores</td>
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<td>sacerdotes</td>
<td>stabilitas</td>
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<td>geldhabat</td>
<td>redividit Gildum</td>
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<td>leuca</td>
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<td>opus militum</td>
<td>ad solidos militiae</td>
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<td>melindium</td>
<td>nolos</td>
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<td>umbrii</td>
<td>donarii</td>
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The utility of this record for the purpose of comparison with the Exeter Domesday is obvious. The Exeter Domesday was published with several other surveys nearly contemporaneous, by order of the Commissioners, in 1770. It was edited and revised by C. J. E. Somers, and is annexed to the volume supplementary to The Great Domesday, folio, London, 1810. Our account of this record is chiefly derived from the Introduction to that volume.

EXETER COLLEGE, OXFORD, was originally founded in 1391, by Sir John Stirling, bishop of Exeter, and some time lord high treasurer of England, and was then called Stapledon Hall. The bishop renounced his scholarships from Hart Hall, and made a foundation for a rector and twelve fellows. Of these thirteen he directed three to be elected from the archdeacon ries of Exeter, Taunton, and Barnstaple: four from the archdeaconry of Cornwall; and that one should be nominated by the dean and chapter of Exeter, from any place they might deem most suitable. He also provided for a provost and sub-provost. In 1416 Edmund Stafford, bishop of Exeter, added two fellow ships from the diocese of Salisbury, and obtained leave to give the college its present name. In 1555 Sir William Petre, knight, secretary of state, and privy councillor to Henry VIII, Edward VI, Queen Elizabeth, both, added eight fellow ships for the counties of Devon, Somerset, Dorset, Oxford, Essex, and any others in England in which he or his heirs might have lands or possessions. These counties at present are Norfolk, Suffolk, Middlesex, Hertford, and Cambridge. Charles I. added by his consent a fellowship for the islands of Jersey and Guernsey, the candidates for which are nominated by the dean and jurats of one of these islands alternately. Lastly, Mrs. Shires, who died in 1690, left certain rents, out of which two fellow ships were founded for the counties of the land South of the Thames, to which the five senior fellows alone elect. The candidates for all fellow ships in this college are required by the statute to be, at least, General's Sophister in the university. The day of election is the 50th of June, except for the Hartford and Sneyd vacancies, when it is on St. Stephen's day. The present foundation consists of a rector and twenty-five fellows, besides whom there are numerous scholarships and exhibitions: and among these, three Eton Scholars, appointed by the protest and fellows of Eton; three Pembroke, by the chancellor of Pembroke, and a post in the Fallarmon by the dean and chapter of Exeter; two from Truro school, nominated by the trustees of that school; and two from Exeter school. Two scholarships have been more recently founded by a bequest of the late William Gifford, for the counties of Devon, with a preference to candidates from the school of Ashburton.

Among the eminent men who have received their education here may be enumerated John de Trevisa, Sir John Fortescue, Sir J. l. Brodie-Bel, Sir William Norg, Joseph Carty, Anthony Ashley Cooper, Samuel Butler, Richard Newdigate, and Dr. Kenmott.

The front of the college is opposite Jesus College, and extends for a hundred and twenty feet, with a large central gateway, consisting of a marble cornice, from which rise four pillars of the ionic order, supporting a semi-circular pediment, crowned by a balustrade. The greater part of this front was renewed in 1853 with Bath stone. The hall was erected by Sir John Acland in 1520. The chapel, begun in 1622, was completed by Dr. George Haweill, afterwards rector. The library was erected in 1788, after a design of the late Rev. J. W. Crowe, public master. On the 31st December, 1836, there were 501 members upon the college rolls. The college owes its existence to the patronage of this society, one of which, the vicarage of Killington, in Oxfordshire, is annexed to the rectoryship. The bishop of Exeter is the visitor of this college.

EXETER. [NEW HAMPSHIRE.]

EXHIBITIONS, METHOD OF. [GEOGRAPHY OF THE WORLD.] EXHIBIT, a deed or writing proved by a witness or admitted by the parties in a suit in chancery, in the equity side of the Court of Exchequer, or in bankruptcy.

EXHIBITION. [School.] EXILE, [BIBLICAL.] EXILITAS. [THOMAS.] EXODUS, THE BOOK OF, is the second of the Pentateuch, or Five Books of Moses, and derives its name from the departure of the Israelites from the land of Egypt, which, in the Greek Septuagint translation, is expressed by the word Exodus (Εξοδος), that is, the going out. In the original Hebrew it is named, according to the modern Jewish orthography in the Masora, Exodus. In the fourth, fifth, and sixth verses of this chapter, the Masorets have it, Exod. vi. 1-2, a word read with the Masoretic points, V.-αλ-ε-ηθμον. 'These are the names.' This book records the slavery and cruelty endured by the descendants of Israel (Jacob) under the kings of Egypt; the birth, exposure, and preservation of Moses; his flight into Egypt; the escape of his brother, Aaron; the plagues inflicted on the Egyptians; the institution of the Passover; the departure of the Israelites from Egypt; the building of a tabernacle, or tent, with the Masoretic points, V.-αλ-ε-ηθμον. These are the titles.

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The Mosaic exodus is noticed by several ancient writers, but with brevity and apparent contempt. The Egyptian historians, Manethon and Chebron, as et al Josephus, considered the exodus as a mere fiction, the story of a people of the desert, and others involved with contagious diseases, were banished from Egypt (Exod. xii. 29, 'they were thrown out of Egypt') by king Ammon; and that their chief was a priest of Helepotes named Moses, who furnished them with a system of religious and laws. (See a similar account in Josephus, Hist., l. v. c. 34; Tacitus, Hist., l. v. c. 3.) Diodorus Sic. in Photi. Biblioth. l. xxxiv.; Justin, l. xxxvi. c. 2.

The period over which the history in the book of Exodus extends consists of 145 years, that is, from the death of Joseph (b.c. 1650) to the formation of the tabernacle in the desert of Arabia (b.c. 1491), one year after the exode in the year b.c. 1491. Mr. Horne, in his Introduction to the Bible, adopts the general opinion of commentators that the whole of the history of the exode cannot be determined at what time of his life; but, as it is stated (xxx. 35) that 'the children of Israel did eat manae 40 years until they came unto the borders of the land of Canaan,' that is, on the banks of the Jordan, opposite Jericho, when
and where Moses died (Gen. xxxiv.), and, 'as things cannot be historically related,' as Mr. Horne observes, 'until they have actually taken place,' it is evident that, if Moses is the author, he must have written it immediately before his death (s.c. 1451). It may be observed, however, that the chronologists have a great deal of opinion exists as to what date should be assigned to the death of the Jews from Egypt, and as to the book of Exodus being written by Moses. In chronological works the exodus forms the fourth grand epochs in the ancient history of the world: thus, 1. The creation of Adam. 2. The Deluge of Noah. 3. The call of Abraham (his emigration from Chaldea into Canaan). 4. The departure of the Israelites from Egypt. This last event, according to the Hebrew text of the Pentateuch, took place a.c. 1453, but according to the Samaritan text, which is the primitive Hebrew (Dr. A. Clarke) it occurred 267 years earlier, that is, a.c. 1728. The learned Perron ('Canon Chronologique,' in his 'Dictionnaire de l’antiquite des Temps,' 4to, 1691) adopting, with improvements, the chronology of the Alexander of Alexandria, or Greek Septuagint, which adds 1500 years to the Hebrew age of the world, determines the exodus to have taken place a.m. 3953, and a.c. 3919. Whiston, Kennicott, Jackson, Brett, Hay, Geddes, and other divines, adopt the Greek chronological system. Archbishop Usher (‘Annosae vel Nov. Test.’) prefers that of the Hebrew text. Dr. Andrews, in his ‘Heb. Diet. and Chronol.’ 1823, puts the exodus a.c. 1677. (See Dr. Hales’s ‘Analyse de la Chronologie; Sir John Marsham’s Chronicon Erycagramum, Ed.; Simon’s ‘Chronology of the Holy Bible,’ vol. iii.) Several hundred other chronologists have turned their attention to this subject, but none have been able to make the chronologies of the women who assembled at the door of the tabernacle. These inconsistencies are avoided by Dr. Geddes; and he observes that the word ‘beauties’ might be interpreted, translated looking-glasses, occurs in a passage of Scripture (1 Co. 11.7), which, in no other antient mirrors divine. The ten miraculous plagues inflicted on the Egyptians are described in the following places:— 1. Water turned into blood, vii. 14—25. 2. The land covered with frogs, viii. 1—5. 3. The dust of the land turned into flies, vii. 12. 4. Blood turned into flies, viii. 20—22. 5. The murrain and death of all the cattle. 6. Ashes produce boils and boils on man and beasts, ix. 8—12. 7. The storms of devastating hail, rain, and fire, ix. 13—35. 8. All the land covered with boils of blood, vii. 10—12. 9. No part of the land might be felt, x. 21—27. 10. The death of all the first born of man and beast, xi. 5—7 and xi. 29, 30. The learned writer in the ‘Universal History,’ vol. 3, p. 374, observes, that the Egyptian magicians and sorcerers were permitted to exhibit the power of the devil for the sake of expounding his comparative impotence; thus, although they did in like manner with their enchantments, (vii. and viii.) in making their rods become serpents, in turning the Nile red with blood, and in covering the land with frogs, yet, they could not, as Aaron, to turn their rods into lice (vii. 15.) Jacob Bryant in his ‘‘Treatise on the Ten Plagues,’ 5vo, 1810, explains their adaptation to the peculiar character, habits, and notions of the Egyptian people, so as to produce the greatest possible aggravation of suffering and misery. The latter half of the 17th century of Exodus are occupied in announcing the civil, moral, and ceremonial law, and in describing the numerous articles of furniture, utensils, and sacred raiment, for the celebration of sacred sacrifices; and the temple, or movable temple, erected as a tent in the desert. The gold appropriated to the vessels and ornaments of the adytum, or holy place, is stated in xxxviii. 24 at 29 talents and 730 shekels of gold. Each of the former being 5464, Sr. 8d., each of the latter, 11s. 4d., they amount to 159,793, 11s. 4d., that is, nearly 160,000.1 Many learned men, observing in the similarity of the Mosaic and Egyptian ritual and religious institutions as described in various ancient writings, have assigned a greater antiquity to the latter than to the former; and some of the former were a mere imitation. Dr. Geddes asserts that Moses made a selection and judicious composition from the ancient Egyptian institutions. (See especially Spenzer, ‘De Legibus Hebeneorum; Sir John Marsham’s Chronicon Erycagramum; and R. W. Kenikens, ‘Disertatio de Institutiis et Congressi Legis.’) Putfark (De Idee) and other ancient authors prove that Jehovah or Jao was the sacred name of God among the Egyptian priests; and that it was not known to the Israelites, till after their return from Egypt. (See Ezek. vi. 3.) The ‘I AM’ of chap. iii. 14 is compared with the Egyptian inscription on the personification of the universe, ‘I am all that is.’ (See Putfark, xxxvii. 850, 890.) Aaron’s eoracular breast-plate (xxviii. 15—30) is thought

Dr. Adam Clarke in his Commentary, being 3,263,000. They are said to have been ‘more and mightier’ than the Egyptians, ‘very mighty’ (l. 9, 20), to have gone out with their ‘armies’ (xli. 51) ‘harnessed,’ that is, accoutred in full battle (xir. 8), ‘with high hand’ (xir. 8), ‘with flocks, and herds, and very many vessels’ (xir. 8), but as they are also said to have been slaves to the Egyptians, who ‘made them serve with rigour and hard bondage, in mortar, brick, and all manner of service in the field’ (i. 14)—to have been led out of their nearest way to Canaan, lest, on seeing war with the Philistines, they should repent, and return to Egypt (xir. 17), and to have been ‘sore afraid’ at the sight of the Egyptians’ marching after them (xir. 10), some commentators understand the word ‘dificulties’ to mean not harnessed, but sung together five or six in a string. Concerning the criminality of the Israelite women in borrowing and appropriating jewels and raiment of the Egyptians by the divine direction (lil. 21, 22, and xi. 2), and God’s hardening the hearts of Pharaoh and his servants, the explanations of Scripture Difficulties, compiled by W. Carpenter, p. 32, &c.

In xvi. 16 it is stated that the Israelites, when they first saw the manna, said one to another, ‘It is manna, for they said not what it was;’ and in xxxvili. 8 of the English translation, it is said that the laws of Moses were made of the looking-glasses of the women who assembled at the door of the tabernacle. These inconsistencies are avoided by Dr. Geddes; and he observes that the word ‘beauties’ might be interpreted, translated looking-glasses, occurs in a passage of Scripture (1 Co. 11.7), which, in no other antient mirrors divine. The ten miraculous plagues inflicted on the Egyptians are described in the following places:— 1. Water turned into blood, vii. 14—25. 2. The land covered with frogs, viii. 1—5. 3. The dust of the land turned into flies, vii. 12. 4. Blood turned into flies, viii. 20—22. 5. The murrain and death of all the cattle. 6. Ashes produce boils and boils on man and beasts, ix. 8—12. 7. The storms of devastating hail, rain, and fire, ix. 13—35. 8. All the land covered with boils of blood, vii. 10—12. 9. No part of the land might be felt, x. 21—27. 10. The death of all the first born of man and beast, xi. 5—7 and xi. 29, 30. The learned writer in the ‘Universal History,’ vol. 3, p. 374, observes, that the Egyptian magicians and sorcerers were permitted to exhibit the power of the devil for the sake of expounding his comparative impotence; thus, although they did in like manner with their enchantments, (vii. and viii.) in making their rods become serpents, in turning the Nile red with blood, and in covering the land with frogs, yet, they could not, as Aaron, to turn their rods into lice (vii. 15.) Jacob Bryant in his ‘‘Treatise on the Ten Plagues,’ 5vo, 1810, explains their adaptation to the peculiar character, habits, and notions of the Egyptian people, so as to produce the greatest possible aggravation of suffering and misery. The latter half of the 17th century of Exodus are occupied in announcing the civil, moral, and ceremonial law, and in describing the numerous articles of furniture, utensils, and sacred raiment, for the celebration of sacred sacrifices; and the temple, or movable temple, erected as a tent in the desert. The gold appropriated to the vessels and ornaments of the adytum, or holy place, is stated in xxxviii. 24 at 29 talents and 730 shekels of gold. Each of the former being 5464, Sr. 8d., each of the latter, 11s. 4d., they amount to 159,793, 11s. 4d., that is, nearly 160,000.1 Many learned men, observing in the similarity of the Mosaic and Egyptian ritual and religious institutions as described in various ancient writings, have assigned a greater antiquity to the latter than to the former; and some of the former were a mere imitation. Dr. Geddes asserts that Moses made a selection and judicious composition from the ancient Egyptian institutions. (See especially Spenzer, ‘De Legibus Hebeneorum; Sir John Marsham’s Chronicon Erycagramum; and R. W. Kenikens, ‘Disertatio de Institutiis et Congressi Legis.’) Putfark (De Idee) and other ancient authors prove that Jehovah or Jao was the sacred name of God among the Egyptian priests; and that it was not known to the Israelites, till after their return from Egypt. (See Ezek. vi. 3.) The ‘I AM’ of chap. iii. 14 is compared with the Egyptian inscription on the personification of the universe, ‘I am all that is.’ (See Putfark, xxxvii. 850, 890.) Aaron’s eoracular breast-plate (xxviii. 15—30) is thought
To be identical with that of the Egyptian chief judge, as described by Diodorus Sicil. i. i. 2, sec. 26.

The learned Huet, Vossius, and others give curious parallels of the birth, life, and deeds of Moses with the primitive Egyptian Basutos, but this is not more strange than the statement of Orogen, who says in his "Hymni on Exodus" that Pharaoh is the devil, his daughter the church, and the two midwives (t. 13) are the "Old and New Testament." (See The Scholiast of Dacier, Rosenmuller, Scholz, Bauer, and Thiel in addition to the Comment on Exodus; Translations and Comments, by Ainsworth, Hopkins, and Bishop Kelder; Dr. A. Clarke's Bible; Horne's Introduction, and in list in Watt's Bibliotheca.)

EXOGENS, the largest primary cells in the vegetable kingdom, are formed in consequence of their woody matter being augmented invadditions to the outside of that which is first formed near the centre. As long as they continue to grow they add new wood to the sides, and when they enter their second and third decades they add a number of concentric circles; but there are so many exceptions to this rule as to render it necessary to consider this character as by no means essential to them.

The nature of the exogenous growth of wood will be explained with an Exogen, if we pursue the same mode of illustration as in the article which treats of the latter form. We will therefore proceed from an explanation of the typical mode of growth in a common Exogen to such remarks as we may have to offer upon deviations from it.

In an Exogen of ordinary structure the embryo consists of a cellular basis, in which there is usually no trace of woody or vascular tissue; but as soon as germination commences fine ligneous cords are seen proceeding from the cotyledons towards the radicles from the opposite sides of the young stem, meeting in the centre of the embryo, and forming a thread-like axis for the root. As the parts grow the ligneous cords are increased in thickness and number, and having been introduced among the cellular basis of the embryo, not only pervade all the growths, but form a kind of cellular substance, which continues to augment both in length and breadth as the woody cords lengthen. By degrees the plumule or rudimentary stem becomes organized, and having lengthened a little, forms upon its surface two, or sometimes three, primary leaves, which gradually spread into plates of cellular substance traversed by ligneous cords or veins converging at the point of origin of the leaves. If at that time the interior of the young plant is again examined, it will be found that more ligneous cords have been added from the base of the new leaves to the outside of the stem, where they have formed a junction with the first wood, and have served to thicken the woody matter developed upon the first growth. Those ligneous cords which proceed from the base of the leaves do not unite in the centre of the new stem, but form a kind of cellular substance of which the outer part is in contact with the inside, and leaves a small space of cellular tissue in the middle; they themselves being collected into a hollow cylinder, and not uniting in the middle until they reach that point where the woody cords of the exogen meet to form an axis of the wood. So nearly the young stem goes on lengthening and forming new leaves: from each leaf there may be again traced a formation of woody matter disposed cylindrically as before, and uniting with that previously formed. The old column of cellular matter being left in the middle, and the solid woody centre of the root proceeds in its growth in a corresponding ratio, lengthening as the stem lengthens, and increasing in diameter as the leaves unfold and new woody matter is produced: the result of which is that the cellular matter of the young Exogen at the end of its first year's growth has a root with a solid woody axis, and a stem with a hollow woody axis surrounding cellular tissue, the whole being covered in by a cellular integument. But as the woody cords are merely plunged into a cellular basis, the latter passes between them in a radiating manner, connecting the centre with the circumference by straight proto-splinters, often imperceptible to the naked eye, but always present. The following diagram illustrates this:

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Here we have the origin of pith in the central cellular tissue of the stem, of wood in the woody axis, of bark in the radiating vessels, and of medullary processes in the radiating passages of cellular tissue connecting the centre with the circumference.

The woody axis is not however quite homogeneous at this time. That part which is next the centre contains great numbers of vessels of different kinds, particularly duct vessels (vasiform tissue), the part next the circumference is altogether destitute of vessels, and consists of woody tissue exclusively: of these two parts that with the vessels belongs to the wood, properly so called, and serves as a mould on which future wood is added; the other belongs to the bark, separates under the form of liber, and in like manner serves as a mould upon which future liber is disposed.

But the commencement of a second year's growth the liber separates spontaneously from the true wood, a viscid substance called radion is secreted between them, and the stem again lengthens, forming new leaves over its surface. The ligneous cords in the leaves are prolonged into the stem, passing among the cambium, and adhering in part to the wood and in part to the liber of the previous year, the former again having vessels intermingled with them, the latter having none. The cellular tissue that connected the wood and liber is softened by the cambium, and grows between them horizontally, as they grow perpendicularly, extending to make room for them, and consequently interposed between the woody cords of which they each consist, forming in fact a new set of medullary processes terminating on the one hand in those of the first year wood, and on the other in those of the first year's liber. This addition of new matter takes place equally in the stem and in the root, the latter extending and dividing at its points, and receiving the ends of the woody cords as they diverge from the main body. The following diagram shows this, and shows when compared with the last, what difference there is in the appearance of the stem of an Exogen one and two years old.

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And thus, year after year, the Exogen goes on, forming zones upon zone of wood, which is permanent, and zone within zone, which perishes as the stem increases in diameter. [Bash.]

If this account is compared with that already given of Endogens, it must be obvious that the stem of these two great classes is formed from the very beginning in an essentially different manner. Endogens have no cylindrical column of pith: their woody areas are never collected into a cylinder, through the sides of which the cellular tissue passes in the form of medullary processes; and the woody matter of their bark, so to call their cortical integument, is cellular throughout that of the wood, and is never separable from it; not to speak of important anatomical differences, or of the concentric arrangement eventually assumed by the wood of Exogens. The only points in which the growth of the stem of Exogens corresponds with that of Endogens are the following: in both classes the woody
matter is connected with the leaves; in both a cellular substance is the basis of the whole structure, and extends horizontally wherever it is necessary to do so; and in certain Exogens woody areas, stated to be like those of Endogens, are found in the pith. These cases properly belong to anomalous forms, but nevertheless may be noticed here, in consequence of their direct connection with this branch of the subject. One case is that of Zania; but as that genus now belongs to the new class of Gymnosperms and not to Exogens proper, it need not be considered here. The other cases are Piper, Nyctaginaceae, plants, and some others. Professor Schultz states (\textit{Naturalisch System der Pflanzenreiche}, p. 326, &c.) that in Piper, Mirabilis, and Boerhaavia, the central part of the stem consists of cellular tissue, amongst which bundles of spiral vessels and wood tissue are placed either without order, or (in Boerhaavia) in a cruciate manner as in tree-forms, and that on the outside of this the woody bundles are arranged circularly into a cylinder. A similar statement had long previously been made by Mirbel, who ascribes to Mirabilis and some Umbelliferous plants longitudinal vessels in the pith (\textit{Elm. de Physiol. Végét.}, t. 112), and by Professor Meyer, who finds the pith of Mirabilis longiflora and diechotoma. Boerhaavia scandens, and Oxypappus Cervantesii abundant in many large bundles of spiral vessels within the woody radiated zone. (\textit{De Haut- tuyxie alque Sauruexis}, p. 46.). This, if correctly described, only shows that in certain Exogens a portion of the central tissue is placed at first in a confused manner, and that the wood does not assume a definite circular disposition till afterwards, that it does assume it eventually is admitted. We find in Piper nigrum and Lonchitis that from the beginning the woody bundles are placed circularly, but they are separated by a good deal of cellular tissue, and do not assume in the first zone, the wedge-like or triangular form which is more common in Exogens, and which they themselves at last take on. In Boerhaavia repanda, a specimen of which is now before us, we find the wood regularly disposed in two zones, and instead of spiral vessels a very singular structure in the pith, which is filled with filiform passages of lax soft spheroidal cellular tissue surrounded by smaller, harder, and more cubical cellular tissue which passes off into the medullary processes. It is in such plants as Piper inanum that the organization of Exogens most nearly approaches that of Endogens; but so far as the whole race of Pipers forms a sort of transition from Exogens to Araceous Endogens; and secondly, it is probable that when they are most endogenous in appearance they are not really so in regard to the final development of their wood tissue.

Let it however be admitted that in certain cases Exogens are in the centre of their stem, organized less regularly than usual; this will offer no argument in favour of their analogy with Endogens. In all such cases it will be found that they eventually assume their typical configuration. We are acquainted with some striking proofs of this. Among twining plants of tropical countries, we occasionally find instances like the following—

Beneath a most irregularly compressed and lobed bark there lies a mass of wood, apparently so confused and irregular in its arrangement in the centre, that nothing symmetrical can be made out by the most acute observer; but it will be seen that towards the circumference it distinctly assumes the radiated appearance of an Exogen. In other cases, where the structure is sufficiently regular, this circumstance is still more distinctly illustrated. It is however more commonly at the centre that we look for typical structure, and at the circumference that we find irregularity; as if Exogens usually commenced their growth according to the plan to which nature has subjected them, and only deviated from it under the influence of unknown causes coming into operation and controlling their development after they have advanced to a certain stage in their growth. Thus in the singular instances shown in cuts D, E, F, and G, the principal part of the stem is so confused and irregular as to look more like an Endogen than an Exogen, and a fragment might easily be mistaken for the former; nevertheless in a young and tolerably regular shoot (D) the radiated appearance is sufficiently well marked; and in two others, irregular and distorted as they are (E and G), the central pith is visible, although far out in the centre; and in the fourth (F) the centre has not only pith, but a radiated structure that is quite regular.

By far the most singular case of this sort is in an unknown twining plant in our possession from the Malay Archipelago, of which the cuts H and I are representations. In old stems of this plant a section exhibits a most irregular combination of wood, looking like palm wood, broken up into lobed cords lying amongst still more irregular cellular tissue, and inclosed in a common bark; so that we doubt whether it would be possible to tell which class it really belongs, if it were not for its young shoots and the pith of the old ones. The latter may be seen lying quite out of the centre towards one side (near the bottom of our figure, a little to the right); and in the former (H) the pith is found with wood radiating around it, although still with sufficient irregularity.

The cases already given are evidences of exogenous wood being sometimes extremely different from the condition in which we see it in Europe, and attest the necessity of forming our ideas of its nature from a more extended examination than that which is commonly given to it. Several curious cases have been previously published by the author of this article (\textit{Introduction to Botany}, edition 2, p. 77, &c.), and others have been noticed by other writers, but the subject has been so little investigated that we gladly avail our selves of the opportunity of giving a description of these interesting cases.

\textbf{VOL. X.--}\textbf{R}
Irregularity in the structure of exogenous wood is usually owing either to a confused disposition of the tissue at some particular period of the growth, or to some derangement of the medullary processes, or to the absence of concentric circles, or to the formation of a deep zone of cellular tissue alternately with each zone of wood; or, finally, to the production of wood within the bark instead of beneath it. The first cause has been already sufficiently illustrated.

The sinuosity and partial obliteration of the medullary processes is a principal cause of the anomalous appearances at figs. D, E, F, G, where they are reduced to fine lines only visible beneath a microscope, and not radiating from the centre, but disposed in no certain manner, sometimes even transversely, owing to the excessive disturbance of the wood itself. In fig. I, the singularity of structure is owing in part to the excessive irregularity with which the wood has been developed, and in part to the looseness and irregular shape of the medullary rays, which seem huddled as if it were round the woody cords; the latter are moreover extremely variable in size, some of them being as much as half an inch in diameter, and others so small as to consist of no more than a single vessel with its usual coating of woody tissue.

The absence of concentric circles is an extremely frequent occurrence in the wood of tropical countries, and it is almost certain that many families of Exogens never form them visibly under any circumstances. We say visibly, because in fact they must be annually formed in all cases, although we do not see them. The reason why Exogens have their wood marked by concentric circles is, that the ligneous tissue formed at the end of a season is more compact than that formed at the beginning, and hence, as the two are in juxtaposition, the difference in their density distinctly separates the one from the other. But if, from any cause—whether proper to plants as species or owing to the external influence of an equable climate—the tissue of wood formed at all seasons is exactly alike, no zone will be visible, although in fact the formation of the wood is exogenous in the most regular manner. Such cases are seen at figs. K, L, S, and elsewhere in the illustrations of the present article.

It is not a little remarkable however that while the wood in some cases has no trace of zones, the bark should show them most distinctly, as in the instance of fig. K.

When a deep zone of cellular substance is formed between each zone of wood, a curious banded appearance is produced, as in the singular Indian climber marked N M O P Q, where extremely excentrical growth is combined with this peculiarity. At N we have the stem two years old, the second...
wood at N M O P Q R, by thick layers of cellular tissue, are rather to be considered as other instances of wood formed in bark, but in a regular and uniform manner. We are orderly uncertain how this may be, and prefer allowing the statement to stand in its present form until some one shall have examined such plants in their native forests of Singapore.

In addition to such anomalous kinds of structure as those now described, Exogens, like Endogens, contain species, the organization of whose stem is so imperfect as to be reducible within no certain rules. Not to speak of Caltiriéche, Ceratophyllum, or Myriophyllum, wherein vessels are scarcely developed, and the woody matter merely forms a simple central axis of growth, we have in this class an exact parallel with Lema among Endogens; some Podostemaceae plants have their leaves and stem completely fused together as so to resemble a Marchantia or an Alga. Such plants are to be regarded rather as instances of imperfect organization than as deviations from a typical form; and it is by no means a violent supposition to conclude that if their organization were more complete it would then become such as is characteristic of the class to which they belong.

woody matter in a circular manner round pity, its augmentation by external additions, and the universal presence of medullary processes which give the wood a radiated character. With endogenous vegetation it agrees principally in the existence of two systems of growth; one original, cellular, and capable of extending and increasing in all directions; the other perpendicular, capable of augmentation in a longitudinal direction only, and developed subsequent to the first.

In both Exogens and Endogens therefore, the one system, which we have elsewhere called the fibro-vascular, but which may also be termed the woody, lies across the other, by which it is held together, as the threads of the warp in linen are held together by the woof, as the writer of this has long since pointed out in another place. (Introduction to Botany, book ii., chap. 3.) This appears to be the circumstance upon which the real explanation of all the phenomena of growth in stems must necessarily turn. We find it is adopted by M. Gaudichaud in his theory of the development of stems, of which a brief notice has been published in the 'Annales des Sciences,' new series, vol. v., p. 24; and Mirbel, the reporter in the place referred to, calls it 'la pierre angulaire de la theorie.' Connected with this, however, are two other facts that require also to be rightly understood; the one, that buds are emanations of the horizontal cellular system; and the other, that roots are elongations of the descending woody system. Unless these are coupled with the first-named fact there will be no solidity in the theory of growth now about to be explained.

Keeping in view all the phenomena above referred to, it will be obvious that the origin of wood is to be sought in the action of leaves, or of buds which are collections of leaves; and the theory of the formation of wood may be thus expressed:

1. Wood is a collection of thick-sided tubular tissue, united in different ways in different species of plants. It is normally combined with vascular tissue, but does not necessarily include that kind of tissue.

2. It is always mixed with cellular tissue; through which it passes, and which in Exogens is arranged in the form of radiating plates.

3. It proceeds downwards from the leaves to the roots; either in parallel series, as in Exogens, or in curving and intersecting lines, as in Endogens.

4. It has the power of lengthening at its lower extremity as soon as it has once been generated, without any further impulse from the leaf from which it emanated. (This undoubtedly happens by the formation of new woody tubes at the points of those previously created.)

5. It is, in fact, the nutrient system of the leaves, and may be regarded as their roots.

6. The quantity of wood in a given plant will therefore bear a direct proportion to the quantity of leaves, or to their size and vigour.

7. In general its development takes place beneath the bark or cortical integument; but it may be found within the bark itself, in which case it continues to follow the order of development proper to it in its ordinary situation. The woody part of bark is also derived from the leaves, and may be in like manner considered a state of their roots; but the office of its tubes is extraordinary than that of nutrient.

This view of the nature of wood is much the same as that first brought to the notice of modern botanists by Du Petit Thouars, an ingenious French physiologist, who, during many years, sustained the opinion in opposition to all his countrymen. It did not however originate with him, for it had been previously taken up by others, who did not purse like himself in maintaining it against the prejudices of their day, and who, moreover, did not possess the skill and extensive acquaintance with vegetable organization requisite to sustain a theory to which so many special objections could readily be offered. The great error committed by Du Petit Thouars, in which it is probable that the slow progress of his opinions is really to be found, was his mixing up noto- rious errors with the truths of his theory. He insisted, for example, that the moment leaves begin to grow, wood is formed 'with the rapidity of lightning,' such threads passing from the extremities of branches to the roots: this was anatomically untrue, for the woody tissue consists of tubes adhering end to end, and not continuous; and the rapidity assigned to their development was altogether imaginary. He next insisted that new roots could not
be developed till new leaves made their appearance this was disproved by the well-known fact that newly planted deciduous trees produce roots before their leaves appear. It may be doubted moreover whether we ever understood that buds originate exclusively from cellular tissue, and roots exclusively from fibro-vascular tissue; a fact, without attending to which, there is no possibility of explaining many common phenomena, but about which we conceive there is no sort of doubt.

It is not altogether a matter of theory that wood is formed of the roots of leaves imbedded in cellular tissue in a definite manner, according to the species: on the contrary, there are many curious facts to corroborate this supposition. The leaves of Citrillus pumicus, and many other plants, particularly Generaeae, emit roots when cut off the stem to which they belong, and completely separated from the bud that is axillary to them. A knowledge of some such fact probably led to the absurd speculation, insisted upon by Bradley in the beginning of the last century, of forming plantations by sticking leaves in the ground. Du Petit Thouars found that the young leaves of Dracena in the Isle of France root between the rind and old wood, forming rays of which the axis of the new shoot is the centre. The case of Pandanus we have adverted to elsewhere (Introd. Bot. ed. 2nd, p. 262); and in the article Endogens of this Cyclopedia we have given a much more striking instance from Barbacenia. In that plant the euts (which it should have been stated are representations magnified about three times) show that when undoubted roots proceeding from leaves are consolidated by passing down one above the other over the surface of the stem, precisely the appearance of palm-wood is produced. This we regard as conclusive as to the true nature of endogenous wood, and it would be unphilosophical to suppose that the wood of one great class of the vegetable kingdom is formed upon one plan, and of another class upon a totally different plan.

It must be highly satisfactory to those who have embraced the opinions of Du Petit Thouars, as modified by the writer of this and by others, to find how nearly they accord with what Mirbel represents to be the ideas of Gaudichaud upon the same subject. M. Gaudichaud is one of the very few physiologists who has studied this question with reference to tropical forms of vegetation. Most others have drawn their ideas exclusively from common European trees; in doing which, with all respect be it spoken, they appear to us to have begun at the wrong end. This distinguished botanist and traveller, in an unpublished memoir for which the Montyon prize was awarded by the French Academy in 1833, is represented as having collected a great mass of admirable observations upon the embryo, the germination, the mode of growth, the stem of a considerable variety of plants, and to have particularly adverted to the important phenomena of barking, striking from cuttings, grafting, pruning, and other horticultural operations; from all which he has deduced a theory of growth which M. Mirbel states to be substantially the same as that above explained. Among other curious facts, he mentions that he possesses a specimen of a cutting of Cissus hydrophora, with a bud upon it from whose base proceeds a woody network which partially invests the lower portion of the old wood, and afterwards escapes on all sides as root. (Ann. Sc. N. S. v. 29.)

We have in the first instance stated in what manner wood is formed according to our own views of the subject. It is now requisite that we should add the views of those who differ from us. That wood derives its origin directly from the leaves in any way whatever, is denied by some, who believe that it is a superficial deposit from the previously formed wood. But as those who entertain this opinion do not explain how the first wood originated, that theory need not be discussed. Mirbel seems to consider that both wood and the woody part of bark are independent formations created out of the cambium; but there is no cambium when the first wood of Endogens is generated, and that substance never makes its appearance at all in Endogens, which as-
vertheless form wood: we however think it may be doubted whether this is the present opinion of that great physiologist. De Candolle says, that the woody and cortical layers are formed laterally from the cambium supplied by pre-existing veins, while wood is formed in pith, and in bark, as we have already shown that it is often. It would take us too far if we were to discuss this subject at greater length; the reader is therefore referred for further information to De Candolle, Physiologie Vegetale, p. 146; Mirbel in the Annales des Sc. Botanique, in the Magazine of Zoology and Botany, vol. i. p. 32; and to our own Introduction to Botany, ed. 2nd, p. 286, 8cc.

The age at which Exogens may arrive is closely connected with their mode of development, as already shown in this work. [AGE OF TREES]

If Exogens are distinctly known from Endogens by their peculiar manner of growth and by the arrangement of their woody matter, they are not less clearly defined by the general appearance of their leaves. Their leaves have the veins ramifying from the midrib, or ribs if there are several, so in intricate a manner as to give the appearance of irregular net-work. Their veins never run parallel with each other without ramifications; rarely, sometimes happen, they appear to do so, it will be found that the secondary veins between these ribs or veins or ribs, and that the secondary veins between them ramify in the usual way. The leaves are moreover in most cases articulated with the stem, leaving behind them a channel, while the die, not rotting away and hanging upon the stem in the form of a sheath, is a prominent feature in Endogens. Moreover, they are frequently furnished with stipules, an unusual circumstance in Endogens.

The flowers of Exogens are usually constructed upon a quadrate type, that is, they have five sepals, five petals, and five stamens, or some power of that number; and now and then they vary to a type of four, or they exceed the number five; but we very rarely find the ternary structure of Endogens present in them. If, as in Anonaceae, Berberisaceae, and other orders, the sepals follow a ternary type, the number three is lost in the flower, or it is so much reduced. Botanists have even considered it as a natural order Menispermaceae is the only one among Exogens in which the ternary type regularly pervades all the parts of the flower.

The mode of growth they rarely resemble Endogens. The consequence of the ramification of the veins is to give their leaves a broad and rounded figure, the effect of which upon their general appearance is to produce the rounded lance shaped aspect that we recognize in all the trees naturally inhabiting deserts. In the first place, the stem grow by the development of a single terminal bud; so that we never find in this class the columnar aspect of palm-trees [Gymnosperms], unless the genus Theophrasta be considered an exception. Consequently, a landscape composed of the latter order would resemble the imaginary scene that forms the subject of the preceding cut.

The differences between Exogens and Endogens, thus strongly marked in the stem, leaves, and flowers, are connected with others in the embryo. In Exogens of the common kind, this organ has two lobes, held together by a minute central body, the upper end of which, between the lobes, is the plumeul or rudimentary stem, the lower the rachide or rudimentary root; the lobes themselves, or cotyledons, are rudimentary leaves. This structure is readily seen, and found in no few of the plants included in this class, but it is few and unimportant as compared with those of Endogens. Three or a greater number of cotyledons may be present in a whorl, instead of two opposite to each other. Or one of the two cotyledons may be much larger than its opposite. These, in the present case, are illustrated, as in the garden-cress. But in all these cases the deviations are obviously reconcilable with the typical character of being dicotyledonous.

When the embryo of an Exogen germinates, the radicle simply lengthens at its point, without having to break through the coat of the embryo; on this account Exogens have been named exorhizal.

The result of this examination is, that the great class of Exogens has an existent, and, in many respects, independent characters, by which its limits are settled.

1. The wood is exogenous.
2. The veins of the leaves are netted.
3. The fructification is formed upon a quinary or quaterinary type.
4. The embryo is dicotyledonous.
5. The germination is exorhizal.

Hence Exogens have received two other names in allusion to such characters; they are commonly called Dicotyledonous, and Exorhizous, and this latter by another and less common application. Moreover, they are the Phanerocotyledoneae of Agerbill, the Anthophyta and Caraphyta of Oken's school, the Dichogama of Schultz, the Phylocladae of Reichenbach; not to mention other names still more obscure.

In consequence of imperfect development, and the abortion or multiplication of parts, many deviations occur from the above characters. But as in Endogens, so in these, there is not in consequence any real difficulty in distinguishing Exogens from other plants. Suppose the stem to be so slightly deflexed, as in Podostemma, or the aquatic Huanotea, as not to arrive at a state in which the exogenous arrangement is perceptible, we have the dicotyledonous embryo, and the typical number of the floral organs to guide us. Let the leaves appear as scales, as in Lathraea, Orobanche, and others, and still there is no deviation from the type. If the fructification is absolutely ternary as in Menispermaeae, the organization of the stem, leaves, and embryo, reveals the true nature of such plants. Or if the embryo is undivided, as in Cuscusia, and at the same time the veins of the stem are oblong, as in Cucurbitea, we have a combination of characters which, if in the vegetable kingdom, the formation of woody matter, then the number of parts in the flower remains to prevent our falling into error. It is therefore always to be remembered, that the limits of this great class are not exclusively determined by one single character, but by a combination of parts which may be occasionally exceptional or undiscoverable.

Like all other natural assemblages, Exogens have many analogies with other parts of the vegetable kingdom. We have already adverted to the Podostemmacean order of this class representing distinctly the Pipistracean order, or at least Lemma among Endogens. In speaking of the latter class. (vol. ix., p. 399) other cases have been noticed, and we now add that Piperaceae are distinct analogies here to the Araceae of Endogens, Chenopodiaciae to Glomis, and possibly Mespipermae to Sapindaceae.

Whatever uses there may be in the vegetable kingdom: to be found in this class, which comprehends four-fifths of the natural orders, and probably not much less than the same proportion of species. Timothy is a weed, and the potato, although of no great importance, are both a distinct part of the same class. Nevertheless, the question of Exogens may be, at least a substitute for it is furnished by the potato and the cassava. To speak therefore of its useful products would be, in fact, to explain the utility of plants to man, and this we shall do in a more appropriate place.

[PLANTS]

Considering the very great numbers of Exogens,—they may be rated at 50 or 60,000 at a low computation,—it is not surprising that it should be here that the systematic botanist or essayist can write with the greatest brevity. The barrackworth note of course occurs in the arrangement of Endogens, as has already been shown; but in Exogens the difficulties are so great as to have hitherto baffled the most acute writers. We do not mean with regard to the natural orders themselves, the latter are in general well understood and defined: our observation applies to a collection of the orders, or, in other words, to the construction of groups of a secondary value which shall be as natural and well defined as the orders themselves. In a recent enumeration we have met with no few cases of Exogens, and it is in the impossibility of a single section and sometimes of a single order to form a combination. The present arrangement is determined by the following considerations: the result of this examination is, that the great class of Exogens has an existent, and, in many respects, independent characters, by which its limits are settled. 1. The wood is exogenous. 2. The veins of the leaves are netted. 3. The fructification is formed upon a quinary or quaterinary type. 4. The embryo is dicotyledonous. 5. The germination is exorhizal. Hence Exogens have received two other names in allusion to such characters; they are commonly called Dicotyledonous, and Exorhizous, and this latter by another and less common application. Moreover, they are the Phanerocotyledoneae of Agerbill, the Anthophyta and Caraphyta of Oken's school, the Dichogama of Schultz, the Phylocladae of Reichenbach; not to mention other names still more obscure.

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[PLANTS]
Apetalous; and 4th, Diclinous plants. The three first of these he again subdivided according to their stamens or their corolla grew near the ovary or ovary (hypogynous), upon the calyx (perigynous), or upon the ovary (epigynous); then the monopetalous epigynous group was subdivided into plants having united stamens and those having them distinct; the result being 11 classes, which were placed by Jussieu in the following order:—

<table>
<thead>
<tr>
<th>Class</th>
<th>Stamens epigynous</th>
<th>perigynous</th>
<th>hypogynous</th>
<th>Corolla hypogynous</th>
<th>perigynous</th>
<th>epigynous</th>
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<tbody>
<tr>
<td>Apetalous</td>
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<tr>
<td>Monopetalous</td>
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<tr>
<td>Polypletalous</td>
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This was however, so artificial a distribution, that botanists soon found it as not satisfactory as it was simple. Various changes have therefore been recommended from time to time, some of which are the following:—

In 1813, De Candolle, dropping the names of all Jussieu's classes, and abolishing many of them, proposed to arrange according to the 112 orders of Exogens with which he was at that time acquainted.

In 1829, Professor Agardh of Lund, now bishop of Carlbad, proposed a great change in the subdivision of Exogens, retaining the principles of primary division recognized by Jussieu and De Candolle, but forming them into twenty sub-divisions, defined by characters analogous to those by which the orders themselves are circumscribed. These, he believe, is the first step of any consequence towards putting Exogens into a more natural grouping than that of Jussieu: in many respects the subdivisions are, as far as they go, unobjectionable; but they have excited scarcely any attention among systematic botanists. The necessity, however, of some better method of subdivision than that of Jussieu and De Candolle has become evident to everybody; and attempts have been made to effect this by Drs. Bartling, Seubelt, Von Martius, and others on the continent, and by the author of the present article; not to mention certain transcendental German writers, whose views, as we do not understand them, we will not attempt to explain. In our own arrangement the class is first broken into the Polypletalous, Monopetalous, and Incomplete subclasses, the latter are next distributed in groups; and finally, the groups themselves have a subdivision of alliances, beneath which the orders are disposed in numbers varying from 1 to 6 or more, the general result being 17 groups of 80 alliances. The following table will show upon what principle the groups and alliances have been constructed. It will be remarked that the terminations of the names express their value; the groups or highest combinations end in "; the alliances, or combinations of a lower kind, in "; the orders in "; the subclasses in ".

EXOGENS. Table of Groups.

Subclass 1. Polypletalous.

Albumen very considerably larger than the minute embryo.

**Group**

*ALBUMINUM*.

Albumen absent, or only forming a layer between the embryo and the seed-coat.

Ovary inferior, often with an epigynous disk.

Ovary superior. Placent petal.

Placent in the axis.

Calyx valvate.

Calyx complete; its parts being all on the same plane.

Carpels united in a solid pistil, parallel with each other.

Syncarpous.

Carpels oblique, upon a gynobase.

Gynobase.

Carpels disunited.

Apolcarps.

Subclass 2. Incompleta (or Apetalae).

Calyx altogether absent.

Achalecta.

Calyx present.

Embryo curved round albumen.

Curvemervora.

Embryo straight.

Stamens epagynous.

Columino.

Stamens distinct.

Calyx tubular, often resembling a corolla.

Tubifera.

Calyx very imperfect.

Rectemervora.


Fruit consisting of but one perfect carpel.

Aggrege.

Fruit of several carpels.

Ovary inferior.

Ovary superior.

Carpels three or more.

Polycarps.

Carpels only two.

Fruit incanescenceous.

Nacamentos.

Fruit caprulare.

Dicarpae.

The orders are disposed under their several alliances in the following sequence:

Table of Alliances and Orders.

**Group 1. ALBUMINAE**

**Alliance 1. Raniales. Herbaceous plants: either with the carpels more or less distinct, or, if that is not the case, with parietal placenta. Ranunculaceae, Podophyllaceae, Papaveraceae, Fumariaceae, Nymphaeaceae, Hydroptilaceae, Nelumbiaceae, Cephalotaceae, Drosaceae.**

**Alliance 2. Anionales. Woody plants, with distinct carpels, which are sometimes confluent. Antimeres opening longitudinally. Myristicaceae, Magnoliaceae, Winteraceae, Anonaceae, Schizandraceae, Dilleniacae.**


**Alliance 5. Berberales. Anters bursting by recurved valves. Berberaceae.**

**Alliance 6. Pittosporales. Calyx inferior. Carpels consolidated; style single. Vitaceae, Pittosporaceae, Oleaceae, Francoaceae, Sarraceniaceae.**

**Group 2. ENTOXYLON**


**Alliance 2. Myrtales. Corolla not valvate. Placent central. Type of flowers not binary throughout. Shrubs or trees. Combretaceae, Alangiacaceae, Rhizophoraceae, Momylaceae, Malastomataceae, Myrtaceae, Barringtoniaceae, Lecythidaceae, Philodendraceae.**


**Alliance 4. Cecruitales. Placent petalarii. Cecruitaceae, Loasaceae, Cactaceae, Hamiaceae.**

**Alliance 5. Ficoideae. Pedals indefinite. Mesembryaceae.**


**Group 3. PARICTAE.**

Alliance 4. Datiscales. Carpels several. Leaves alternate. Datiscaeeae, Lacisto-

Group 2. ACHLYMOIDES.

Alliance 1. Piperales. Carpels solitary or distinct. Flowers in spikes. Embryonic minute, in the base of leafy or sheathed. Chloranthaceae, Saururaceae, Piper-


Group 3. TURFIFERAE.


Alliance 5. Penaeidae. Carpels several. Calyx imbricated or valvate. Penaeidae.


Alliance 3. Convolvulales. Annum. Radicle nect the hilum. Amaranthaceae, Chenopodiaceae, Tetragoni-


Group 5. POLYCARPOS.


Alliance 3. Primulales. Anthers opening longitudinally. Carpels four or five. Fruit often one-celled. Primulaceae, Myrsinaceae, Sarcococca, Ekeraceae, Sty-


Alliance 5. Volvales. Carpels two or four, combined. Stipites numerous. Convolvulaceae, Cuscutaceae, Polononaceae, Diepeanaeae, Hydrocaceae.

Group 2. EPICNOIDES.


Group 3. AGROKRONOS.

Alliance 2. Disperaeae. Anthera distinct. Ovary in
fer. Disperaeae, Valerianaceae.
inflated. Euphorbiaceae, Sal-

naked. Style single. Plantaginaceae, Globulariaceae, Sal-

Alliance 5. Plumbaginaceae. Ovary superior. Stigma
naked. Styles free. Plumbaginaceae.

Group 4. Nucamentaceae
Alliance 1. Phaceliales. Fruit cupular. Inflorescence
gynoecious. Hydrocotyle.

Alliance 2. Echites. Fruit nucamentaceous. In-
florescence gynoecious. Flowers symmetrical. Cordiaceae,
Menispermaceae, Erythraceae, Boraginaceae.

Alliance 3. Labiales. Fruit nucamentaceous. Flowers
unisexual. Labiateae, Verbenaceae, Myoporaceae, Selaginellaceae, Silbaceae.

Group 5. Dicarpaeae
Alliance 1. Bignoniales. Flowers didymous. Seeds
winged. Albumen none. Calyx complete. Pedali-
aceae, Bignoniaceae, Cynandraceae.

Alliance 2. Acanthaceae. Flowers didymous. Seeds
adhering to hooks, not winged. Albumen none. Calyx
deciduous. Acanthaceae.

Alliance 3. Lentibales. Flowers subdidymous. Fruit
acral. Lantana.

Alliance 4. Scrophulariaceae. Flowers didymous. Al-

Alliance 5. Solanaceae. Flowers symmetrical. Al-
bumen. Placenta with axis. Solanaceae, Cestraceae.

Alliance 6. Gentianales. Flowers symmetrical, te-
randrands or pentandrous. Placenta perpendicular
to axis. Seeds often winged. Leaves opposite. Gen-
tianales, Acanthaceae, Gentianales.

Alliance 7. Loganiaceae. Flowers unsymmetrical. Sti-
men never two. Leaves always opposite. Loga-

Alliance 8. Oleanaceae. Flowers regular, unsymmetri-
cal. Olearia, Jasminaceae.

We shall not be restrained by false delicacy from criticising
this arrangement freely, with reference to its merits as
well as its demerits. We will therefore at once say, that in
several respects it is a decided advance in the grouping of
the orders. By abandoning the artificial distinction of pe-
ignyous and hypogynous insertion, many orders naturally
allied are brought into contact. The great mass of Polyp-
talaceae is now placed in a class with the others, instead
of being thrown into a class by itself.

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With regard to the Apetalous sub-class, it is even more objectionable than the Monopetalous. There is no end to the instances of Polypetalous orders being Apetalous; and in Thymelaeaceae, Menispermaeaceae, Polygonaceae, and a few others, the presence of petals in particular genera is a mere arbitrary use of a term. Furthermore, in the Monotropaceae, in fact, to be imperfect forms of Polypetalous, and will naturally arrange themselves in the same series with what may be supposed to be their more perfect types. Piperales seem a degraded state of Annonales, Fennales of Onagraceae, Daphniales and their allies of Onagrales. But a large proportion of the Apetalous orders undoubtedly require to be located separately. They have distinct sexes and a peculiar habit, and must be considered a quite distinct group, as far as its morphology. Many Apetalous orders unaccountably located separately. They have distinct sexes and a peculiar habit, and must be considered a quite distinct group, as far as its morphology.
which affinity and analogy can be distinguished; and
moreover, it is a most difficult thing to divest the mind of
the prejudices that inevitably result from a long habit of
thinking erroneously.

Nevertheless, in spite of all such obstacles, Truth is surely
to be found; and when found, she will prove most richly
worth the labour bestowed in searching for her. One great
and immediate advantage that may be expected from a
discovery of the true method of arranging exogens ac-
cording to their real affinities will be a great simplification
of the subject; and the extent to which this seems to be
affected by the plan now proposed is much in favour of its
being at least an approach to a discovery of the secret we
are in search of. We will not here undertake to re-arrange
all the orders already named according to the method now
suggested; but the following table will serve to show that
each of the five groups now proposed does exhibit distinct
lateral analogies between its own series of orders and those
of the groups standing next it.

Acanthaceae Myrtaceae Ericaceae Malvaceae
Cineraceae Euphorbiaceae
Amaranthaceae Capparidaceae
Vitaceae Convolvulaceae
Moraceae Lamiaceae
Garrvaceae Lobiaceae

That those groups are all perfect in themselves, or nearly
so, is sufficiently proved by Albuminos, the sequence of
whose orders may be expressed as follows; the orders in-
cluded in the diagram being marked with *.

1 Anonales. Magnoliaceae
   Winteraceae
   Dilleniacese
   *Anonacese
   Monimiaceae 2 Ranales. Nymphaceae
If we should find it necessary to recur to this subject, we shall do so when speaking of NATURAL ORDERS.

EXORCISM, (exorkizein) the form of adjuration, or command, by which superstitious persons are subjected to command, or driven away: from the Greek exorkizein (exorkizein). See Joanna Wierzi, De Prostagisia Dormantum et inanitionibus ac veneficiis Libri vi, s.vo, Bas. 1566 and 1568, and the Manuale Exorcizorum, by Maximilian ab Eynatten, s.vo, Antwerp, 1519.

EXORHIZ. [Exogen.] EXOTERIC and ESOTERIC (exoterikos, exoterikos), literally "external" and "internal," were two terms used in reference to the writings and doctrines of many of the ancient Greek philosophers. The general distinction between the classes of works called by these respective names is this: the 'esoteric' were those writings which were in a more popular form; the 'esoteric' those which were written in a scientific and more exact form. The 'esoteric' would of course contain fewer errors and by the philosophers be more exactly understood; the 'esoteric' would exhibit philosophical systems in such a form as the mass were able and willing to receive. The 'esoteric' writings consequently accommodated themselves to popular prejudices and superstitions, the latter being the case in which a certain amount of philosophical truth could be conveyed to the vulgar. The 'esoteric' writings and doctrines were reserved for those who were far enough advanced to understand them, and to form a just notion as to the prevalent false opinions of the masses. The Gnostics has lastly exhibited this distinction between 'esoteric' and 'esoteric' doctrines in forming our judgment of the character and writings of the ancient philosophers. [Aristotle, p. 334.]

EXPECTATION OF LIFE, a term applied to the mean or average duration of the life of individuals of any given age. [Life. Mean Duration of.] EXPECTORANTS (from ex, out of, and pectus, the chest) are medicinal agents, which, in certain conditions of the body, as pulmonary congestion, assist the expectoration of the air-passages and of the lungs, facilitate its expulsion. The articles which bear this name differ considerabliy as to the means by which this end is accomplished. They are chiefly derived from the vegetable kingdom, some being gum-resins, or balsams of a stimulating quality, while others are possessed of nauseating or sedative properties; vapours also are expectorants, and may be either simple, as that of warm water, or medicated with different preparations. Vapours also affect the lungs, to be affected, and are therefore the only direct expectorants; the others being taken into the stomach must operate by sympathy or some other obscure agency.

From the difference in the nature of the substances regarded as expectorants, it is clear that they may be arranged in a very different manner according to the state of the system, the pathological condition of the lungs, and the stage of the complaint. Great care is necessary in selecting the particular agent suited to each case, and in no set of diseases are greater errors committed by unprofessional persons by an undiscriminating employment of these agents, than in those of the lungs, from common colds to the more serious and fatal affections of those vital organs. The slight nature of many of the common maladies of the lungs, and the facility of consumption, which is generally considered as a disease of the lungs themselves, while it is truly an affection of the whole constitution, have led to a degree of interference with the treatment of diseases of these organs not attempted in any other cases, as the more common popular remedies for coughs, colds, and consumptions, attest.

Those who regard their health and wish to prolong their lives should beware of tampering with such important organs by means of any of the numerous nostrums vended to the public. To treat satisfactorily the diseases of the lungs it is necessary to know their structure, and the relations they have to the other parts of the body. The bronchi (or air-passages) and the capillaries of the lungs are lined by a pearly membrane which has considerable sympathy with the skin and intestinal canal more close than with any other part of the system. A vicious discharge or secretion is thrown off by the internal (pneumogastric) or external surface (i.e. the skin), and any considerable diminution in the secretions of this discharge is in some degree compensated for by augmented secretion of the other. Hence when the insensible perspiration of the skin is suddenly checked by exposure to cold, a double duty is thrown upon the internal membrane, sometimes of considerable extent, and what the stethoscope may call the patient to spasm of the lungs, when ratherr (common cold), or pneumonia may ensue. This fact enables us both to comprehend the cause of some of the diseases in which expectorants are proper, and their mode of aiding the cure.

A certain exhalation from the internal surface of the lungs and air-passages constantly goes on in a state of health—any considerable diminution or augmentation of this exhalation may require the assistance of medicines to raise it to the proper quantity in the one instance, or to evacuate the surplus in the other. The chief causes which lead to diminished secretion are inflammation and spasm—hence at the commencement of inflammatory affections of the air-passages and of the lungs the inner membrane is so much engorged that what is called the spasm of the respective lung is heard; in asthma and looping-cough, while the spasm lasts, there is an absence of secretion, which becomes abundant when the spasm yields.

To obviate these states very different means must be employed from those which are necessary in the later stages of an inflammatory affection, or where there was extreme relaxation of the vessels of the lungs, and the exhaled fluid redundant in quantity. One of the terminations of inflammation being effusion, when the increased action of the mucus glands is caused by some accident, or what is called the spasm of the respective lung in which is precisely the reverse of what it was before, and an extreme quantity of mucus obstructs the access of air to the blood circulating through the cells of the lungs: if this continue to accumulate digestion must follow. Too great an accumulation sometimes takes place, especially in elderly people, not from excessive secretion but from deficient absorption.

These are a few of the different states for which expectorants are used, but much circumspection is required to render the administration of these agents, so highly and so widely indiscriminated the best expectorants are those which lessen the inflammatory state, such as venesection and nauseating doses of turpentine or of ipecacuanha, and the inhalation of vapour of the same, or medicated, by means of Mudge's Inhaler. But as all such of any such instrument requires considerable exertion of the respiratory organs, where the inflammation is violent it is inadmissible, as the lungs must be kept in as tranquil a state as possible; but the head may be held over a basin of warm water, the vapour of which will be received by the lungs in the ordinary course of inspiration.

When the inflammation has subsided, the more stimulating expectorants may be used. Where there is first inflammation and ultimate decubitis the best expectorants are those which lessen the inflammatory state, such as venesection and nauseating doses of turpentine or of ipecacuanha, and the inhalation of vapour of the same, or medicated, by means of Mudge's Inhaler. But as all such of any such instrument requires considerable exertion of the respiratory organs, where the inflammation is violent it is inadmissible, as the lungs must be kept in as tranquil a state as possible; but the head may be held over a basin of warm water, the vapour of which will be received by the lungs in the ordinary course of inspiration.

The articles on which the manufacture of these agents is most extensively carried on are: first, the scentuous or resinous or volatile oil of the flowers, leaves, or roots of the plant used to produce the expectoration; second, the medicated sulphate of antimony, which is used to excite the spasmodic spasms of the lungs; third, the double sulphate of antimony, which is used to excite the expectoration of the mucous excesses of the lungs. These are the most generally employed expectorants; but many others are employed in the local treatment of the lungs, and the extraneous organs of respiration, such as the lungs, and the nose, and ears, and throat, and teeth, and palate, and stomach. These are the most generally employed expectorants; but many others are employed in the local treatment of the lungs, and the extraneous organs of respiration, such as the lungs, and the nose, and ears, and throat, and teeth, and palate, and stomach.
EXPLANATORY. [MADPHYSILOGIA.]

EXPONENTIALS. NOTATION OF.

In the algebraical expression \( a^x \), \( x \) is the exponent of \( a \).

If we were strictly to preserve the most ancient meaning of the term, \( x \) would be called the exponent of the whole symbol \( a^x \); but it is usual to call \( x \) the exponent of \( a \), and the whole symbol \( a^x \) the exponent of \( a \).

From the time of Descartes it has been usual to employ exponents in abbreviation of repeated symbols of multiplication: but this was only the beginning of a series of extensions which have made the theory of exponents a fundamental part of analysis. Beginning with the simple substitution of \( a \) instead of \( a \times a \), \( a^2 \) instead of \( a \times a \times a \), and so on, we have a succession of new symbols suggested by the processes of algebra, namely, that \( a^2 \) should stand for \( a \times a \), \( a^3 \) for the reciprocal of \( a^2 \), and \( a^4 \) for the \( n \)-th root of the \( m \)-th power of \( a \). These conventions being made, the common algebraical theory of exponents is complete; and the student will find in works on algebra an account of the manner in which the necessity for these extensions appears. The theory of logarithms flows naturally from this notation and the binomial theorem.

Looking at the notation of exponents in another point of view, we see that \( a^x \), or \( a \) signifying the performance of a certain operation on the unit \( a \), or \( a^2 \) signifies the repetition of the same operation upon \( a \) itself; \( x \) denotes the repetition of the same operation upon \( a^2 \), and so on. Hence by analogy, whenever, in the higher parts of analysis, \( x \) signifies an operation performed upon \( a \), \( x^2 \) signifies the repetition of the operation upon \( x \). Thus if \( x^2 = 1 + 2x \) then

\[ x^2 = 1 + 2(1 + 2x) + 3x^2 \]

It appears by resounding analogous to that which establishes the meaning of exponents in algebra, that \( x^2 \) must stand for \( 2x \); also \( x^x \) is defined as the exponent inverse to \( (x) \), which destroys the effect of \( x^x \); thus if \( x^x \) signifies \( a \), \( a^x \) must be \( x \). Also \( x^x \) signifies that operation which performed \( n \) times in succession, gives the same result as \( x^x \) performed \( n \) times.

The Differential Calculus and the Calculus of Differences furnish striking examples of the notation of exponents. As soon as the student arrives at the higher parts of these subjects, he should pay particular attention to the structure of the notation, and in particular to the meaning of those theorems in which the symbols of operation are separated from those of quantity.

EXPORTS. [IMPORTS AND EXPORTS.]

EXTORTION (Latin: Extortio) is a writ of execution (sometimes called an extendi factos), which is directed to the sheriff against the body, lands, and goods, or the lands only, of a debtor; and it is also used as signifying the act of the sheriff or officer upon the writ itself.

The king, in certain cases, referred to this writ either in chief or in aid for the purpose of obtaining satisfaction of debts originally due to him or assigned to the crown. The writ of extend in chief is an adverse proceeding by the king for the recovery of his own debt, and in which he is the real plaintiff. This writ is issued out of the equity side of the Court of Exchequer; and the sheriff, for the purpose of executing it, may break open the defendant's doors, when purposely closed, either to arrest him or to take his goods. If, however, the defendant cannot be found or is not amenable to an arrest, the sheriff has power to a jury to inquire as to the debtor's lands and tenements, goods and chattels; and after the inquisition is made, the lands then become bound to the crown until the debt is satisfied. The law of extend in aid is also used out of the instance and for the benefit of the crown against the debtor of a crown debtor: in this proceeding the king is the nominal plaintiff only. This writ is in effect an extent in the second degree, and in order to obtain it an extent pro forma must be made against the crown, or in which an inquisition is taken; and if it be thereafter found that another person is indebted to him, the Court of Exchequer, on an affidavit to that effect, and also to the effect that the crown debt is in danger, will grant a flat or warrant for execution in aid. In this writ, the body of the defendant may in strictness be taken in execution as well as his lands, tenements, goods, and chattels, &c.; but where there are effects sufficient to satisfy the thief the court seems generally disposed to give the defendant his discharge.

On the return of the writ of extent in chief or in aid to the court from whence they are issued, an order is endorsed on the back of it, "that if no one shall appear and claim the property of the goods, &c., before such day as is mentioned or before that day so nigh, a writ of vendition extorsus shall issue to sell the same." If the produce of the goods sold be not sufficient to pay the debt, the court will make an order for the sale of the debtor's lands under the 25th George III., c. 35.

There are various means of resisting the execution of the above writs, on the ground of informality or want of title in the crown; which may be referred to in the second volume of Mr. Titus's work on the practice of the superior courts.

The writ of extent for the subject is founded upon a recognition at common law or by statute, or upon a judgment in an action of debt against an heir, on the obligation of his ancestor. It is very similar in its effects and mode of operation to the other writs of extent already specified.

[Exeg.] When lands are delivered over to a creditor upon an extent, a reasonable hurt not the real value is set upon them; and the effect is the same as if the creditor took a lease of the lands until his debt is satisfied. The time during which the creditor will hold the lands will of course be determined by a comparison of the value set on the lands with the amount of the debt. (Coke on Libertas: Titus's Practice: Blackstone's Commentaries.)

EXTORTION. [EXTRACTS AND EVOLUTIONS.]

EXTRACTS are medicinal preparations of vegetable principles, obtained in various ways. Sometimes they are merely the juices expressed from the fresh plants, brought by careful evaporation to the consistency of honey, and then more properly denominated nhippeusted juices: or those are employed which are of certain parts of a dried plant extracted by some menstruum in which they are soluble, such as water, proof spirit, or vinegar, and afterwards evaporated, as in the former case. According to the nature of the menstruum employed the extract is said to be water truncate, spirit truncate, or acetous. Even in such proceedings are, to ensure the preservation of the active principles of the plant by removing the fluid in which they are dissolved, or the materials with which they are associated, that have a greater tendency to fermentation or putrefaction; to bring the valuable portion into the smallest possible compass; and to facilitate the administration of them by thus rendering them capable of being made into pills, &c.

The preparation of extracts requires the greatest care. The plants must be in every respect of the best quality, as regards the place of their growth, season when collected, &c., and the evaporation must be conducted rapidly, yet at a low temperature. Orfila found that the excellence of preparations of this kind was in the reverse ratio of the temperature employed to form them. Mr. Barry effected a great improvement in the mode of preparing extracts by evaporating in vacuo. During the preparation, and especially towards the end of the operation, frequent stirring of the contents of the evaporating pan is necessary to prevent burning or decomposing any portion of the mass. Extracts may also be formed from dried plants, harks, roots, &c., by reducing them to fine powder and macerating it for 24 or 48 hours in sixteen times its weight of water, or sometimes for no longer than a day. In some cases it is proper to employ warm. The extract of cinchona, prepared with cold water, is less powerful than that prepared with warm.
Extracts are simple or compound, according as they are prepared from one plant or from several different kinds. They are usually attended by a degree of unsuitability where a volatile oil is the active agent, unless great care and a very low temperature be used.

A well-prepared extract should possess, in a great degree, the odour, and especially the taste, of the plant from which it is obtained, as well as a visible resin or gum extracted by the spirituous menstruum. The taste, and it should have a proper and uniform consistence. It is necessary to preserve extracts in a dry situation; to assist in keeping watery extracts, it is customary to sprinkle a little alcohol over the surface before covering them up; but watery extracts, if made with boiling water, are due care usually require this precaution. It is proper to examine the condition of all extracts very frequently, both during very warm and very wet weather: any portion which seems spoiled should be immediately thrown out.

EYCK, John van, the improver and supposed inventor of oil-painting, sometimes called John of Bruges from his having settled at that place, was born at Maasoyck as is generally said, in 1370, and studied with his elder brother Hubert (born in 1366), an artist of reputation, but now rarely mentioned except in connection with the former. There are however some reasons for supposing John to have been born much later than 1370. There are very contradictory accounts of his merits. Some extol him as a various and expressive designer; others say he had no claim to repute, except as a colourist; others again found his whole fame upon his discovery of the art of painting in

Ecchymosis; they are also known by various other names, as olives (whales), petechiae, and purpura. They are frequently produced in various parts of the body, from slight bruises of the intestines and bladder, and of the nose; and they often occur, in the lower extremities especially, when the liver is enlarged, or otherwise diseased. They are supposed in general to indicate a want of tone in the system, and are sometimes attended by a sensible heat of the skin and the general condition of the blood; but they arise in some instances from a plethoric habit, and require bleeding for their cure.

One of the most common causes of apoplexy is an extravasation of blood in the substance of the brain, or between the principal membranes, from the simultaneous rupture of many minute arteries. It happens for the most part suddenly, when the vessels of the head are proternaturally distended, but yet not without some premonitory signs; and as the affection occurs most frequently at an advanced period of life, a proper remedy for this disease, is probable that the rupture is often preceded by some morbid change which renders the capillary vessels more than usually fragile. [ApoplExY.] The term apoplexy has been extended by modern pathologists to similar extravasations occurring in the texture of other organs besides the brain; it may take place in the liver when the venous system of the abdomen is loaded with blood, and from other causes; and it frequently happens in the lungs when their circulation is either obstructed or too forcibly impelled. In the latter case it is especially supposed to happen very commonly in the early stage of consumption, when the body is yet full of blood, and the substance of the lungs is rendered brittle and inelastic by the deposit of tuberculous matter. [Pneumonia.] When it occurs in the lungs, the lungs, the heart, or the brain, the symptoms are either hemorrhage, or splitting of blood. In this, as in many extravasations of the same kind, it is probable that the blood is diffused rather in consequence of a rent, or breach of continuity in the structure concerned, than from what is implied in the common sense of the term extravasation of blood.

The presence of extravasated blood does not in itself produce much irritation, and the coagulum is soon absorbed when the quantity is not very great, and the vital powers are not depressed by concomitant causes. Where pressure is applicable, the extravasation should be well compressed, or if put on after the immediate effects of the injury have subsided, as in sprains and bruises of the limbs: friction and embrocations have the same effect.

Extravasations of urine may take place in consequence of rupture of the bladder, or urinary passages from ulceration, mechanical injuries, or any cause that produces tension to a great degree. If the fluid escape into the cavity of the abdomen, the result is uniformly and speedily fatal, as it ascends to the diaphragm, or is discharged into the bursa or the intestine, the accident is still a very serious one, though it generally admits of cure if the nature of it be immediately recognized. The fluid, which is highly deleterious, must be promptly evacuated by an incision, and as much as possible used to prevent further infiltration. If this be neglected, unhealthy suppuration is sure to take place, accompanied by fever of a typhoid character, and followed by extensive mortification.

The most common causes of infiltration of urine are abscesses of the prostate gland, and neglected or mismanaged strictures; and a very frequent consequence is the establishment of a urinary fistula in the perineum. [Urinary Organs.]

It may be remarked that the bile is sometimes extravasated in the same way from the gall-drugs or bladder. If it escape into the abdomen, it is followed by a similar fatal result from inflammation of the peritoneum. [Abdomen: Calcut, Biliary.]

Exuma, Bahamas.

EYCK, John van, the improver and supposed inventor of oil-painting, sometimes called John of Bruges from his having settled at that place, was born at Maasoyck as is generally said, in 1370, and studied with his elder brother Hubert (born in 1366), an artist of reputation, but now rarely mentioned except in connection with the former. There are however some reasons for supposing John to have been born much later than 1370. There are very contradictory accounts of his merits. Some extol him as a various and expressive designer; others say he had no claim to repute, except as a colourist; others again found his whole fame upon his discovery of the art of painting in
EYE.

The treatise is little the We the is may need the the but horizontal; certain is bodily the sun, which is mised, in attached should found twelve it was painted for Iodocus Vyt, a rich citizen of Ghent, while others afirm that it was by order of Philip, duke of Burgundy, count of Flanders, who came to the government in 1420. It is certain however that John Van Eyck was long attached to the brilliant court of Philip. This often described picture contains no fewer than 330 figures. It is with folding-doors, filling in all twelve panels. It was so highly prized that it was shown on particular occasions. Philip II, king of Spain, thought of removing it to Madrid, but, according to some, to consult Michael Coxis of Maine. This copy has in our days found its way back to the Netherlands, and thence, as it should seem, to Berlin. The fate of the original is remarkable, and much to be regretted. It remained entire till the fire of the Odeon of Berlin burned their eyes to so rich a prize. The clergy of the cathedral of St. Bavon succeeded however in concealing eight of the twelve panels, so that only four were taken to Paris, whence they were brought back in 1815. The clergy have since sold off the rest of the panels, which are now in the Royal Museum at Berlin, where they are united with a part of the copy made by Coxis for Philip II. Hubert Van Eyck died in 1426. John is generally said to have died in 1441, but the date of his death is uncertain.

EYE. The organs appropriated to the sense of sight are distributed very extensively, yet with that frugality which always regulates the operations of nature in the construction of animals. All the active species which live in the light are furnished with them; the rest are disqualified to possess as well as to profit by them, by their limited powers of locomotion, or by constant residence in the dark. In conformity with this rule, to which there are few, if any, exceptions, these organs are occasionally associated with the sense of hearing, and developed and are sometimes absent in the highest. Thus some radiated animals, most of the articulated tribes, and many of the mollusca, have manifest organs of vision, and some of them are of the most curious and artificial construction; on the other hand, the mammals, belonging to the highest order of that class, the mammals, are blind. They have eyes, it is true; but those of the mole are not larger than the head of a pin, and are unprovided with optic nerves; and the equally imperfect eye of the shrew is covered with skin, from which hair grows as on the rest of the body. Hence, even in the absence of further evidence, we might conclude that if these animals have any perception of light, it can only be sufficient to warn them back to their haunts when by any accident they have got out of it; and, as they do not see at all; and that these rudimentary organs, like the mule nipple, exist only in conformity with the general model of vertebrate construction.

The structural peculiarities of the eye, as well as the presence of that organ, may be inferred with more certainty from the circumstances of an animal, than from the place it occupies in any zoological scale: in fact, no part has a closer relation to the habits and mode of existence of the eye may be simple or compound, single or multiplied, fixed or movable, free or enclosed in a bony shell; or it deeply imbedded within the protection of a bony socket; or project from the surface of the head at the extremity of a sensitive and retractile horn: it may be adapted for near or distant, oblique or direct vision; for seeing in a strong or a weak light, in a dense or in a rare medium; or it may be formed so as to accommodate itself to each of those conditions in its turn: and these peculiarities will all be found upon examination to be in strict accordance with the exigencies of the animal. Mere difference in body size, and the proportionate reduction or increase in the bulk of the eye, is sufficient to constitute a distinct species; whereas, the peculiar use to which the eye is put explains why such discrepancies are observed to exist in animals otherwise alike.

Yet with all the varieties in configuration to which we have alluded, it is rather in form than in substance that the eyes of animals differ from each other. The organ has always a common purpose, and is essentially the same in all cases: it is, we find an assemblage of the same fundamental parts, generally arranged in the same order, even when our powers of observation are assisted. The image is lost in extreme tenuity of texture and the transparency which results from it. And although there are refinements in the structure of the organ of which we do not know the purpose, and certain delicate adjustments in the exercise of the faculty which we do not know the instruments, yet upon the whole we can deduce the principle upon which the eye is constructed, and assign the uses of its several parts with great certainty from our knowledge of optical and physiological laws.

In a former chapter we have given some historical remarks on the organ in general, we now proceed to the most interesting of its varieties—the human eye. We propose, in the first place, to describe its anatomical structure at some length, noticing as we proceed, or subsequently, some of the most remarkable deviations from the general type. When these eyes of other animals. We shall then add a few observations on the physiology of vision, and complete our account of the organ with an outline of its most important diseases in the human subject.

The object, or what may be called the general predilection, of the eye, as we may term it, is to combine distinctness and extent of vision with the security and maintenance of the organ, and the utmost convenience in using it. The parts associated for these purposes are the orbita, or sockets, of the eye; the optic nerve; the eyeball; and the muscles which move and suspend it; the eyelids; the lacrimal appendages; the nerves and vessels which supply those parts, and the mass of fatty and cellular substance which isolates and supports them. We shall describe these parts nearly in the order in which they have been described.

Orbita.—The eyes with their appendages are lodged in two symmetrical roomy cavities in the skull, completed in front by the eyelids, but elsewhere entirely circumscribed by bone, the office of which, it need hardly be said, is to preserve the organs of sight from the contact with the exterior, and to embrace the perfect freedom and precision of their movements. These cavities are called the orbita, orbital fossa, or sockets of the eye. Seven bones of the cranium or face, which we need not enumerate, enter into the composition of these bony closed cavities, and are continued beneath the skin, forming the depth, which is about two inches, by the posterior chambers of the nose. They are conical in shape, or, more strictly speaking, pyramidal, and obliquely quadrangular. The apex is directed backwards; the base, about an inch and a quarter in width, is directed forwards, with a considerable inclination outwards or towards the temple. The margin is less prominent at the outer side than elsewhere, so that when viewed laterally it presents a wide semicircular notch, with the concavity forwards. One object of the divergence and arrangement of the bones which form the orbita and its margin, is obviously to increase the extent of vision. If the point of the finger be held before the eye, and carried gradually back towards the ear, it will be observed that, in consequence of this arrangement, it can be seen long after it has got behind a vertical plane touching the front of both eyes, which, taken together, are thus enabled to sweep over an angle of about 220° or 20 on each side behind the tangent plane. Above and below, the edge is undercut as well as prominent, and the socket is therefore a little wider at the top than at the bottom, and extended in front of the eyeball at these points. The inner or nasal sides pass directly backwards and are parallel to each other, and the roof is horizontal; consequently the conical form of the cavity arises from the inclination of the outer side and floor. In the angle between these sides, and in between the first and the roof, there are two long irregular elids. The former opens into the deep hollow between the
temple and the back of the upper jaw; it is called the fora-
men lacerum inferior, or spheno-maxillary fissure, and gives
passage to a branch from the fifth pair of nerves, which
percing the bone, passes beneath the floor of the orbit, and
envelops the upper part of the eyeball, passing through a hole
in the lower edge of the orbit, about a third part from the inner
angle of the eye. The other slit, which is called the epi-
phondial fissure, or foramen lacerum superior, opens into the
cavity of the head, and transmits another branch of the fifth
pair, which passing within the orbit, along the roof, comes
out through an opposite notch in its upper margin, and is
distributed upon the forehead and upper lid. These
branches of the fifth pair, called the supra and infra-orbi-
tory nerves, are the most frequent seats of that exercising
affliction the tic-douloureux or neuralgia; through the epiphon-
dural are likewise transmitted the ophthalmic veins, and all
the other nerves except the optic destined to the eye and its
appendages. A third opening, which is circular, called the
foramen opicium, of the size of a large quill, and leading also
from the cavity of the skull, gives passage through the
spheoidal bone to the ophthalmic artery and the optic nerve.
It is directed obliquely outwards and forwards, and is
situated at the apex or back part of the orbit, in the angle
between the nasal side and the roof. In the same angle,
close to the margin, that is just within the corner of the eye,
near the nose, there is a deep groove leading into the lacry-
mal canal, to which we shall have occasion to recur here-
after.

Optic nerves.—The optic nerves, arising at the back part of
the brain, with which they have no nerve and no important
connections, not only where they seem to originate, in the
corpora quadrigemina, but throughout the whole of the
first part of their course within the cranium, pass horizon-
 tally forward above the floor of that cavity, converging
towards the optic foramen, and therefore intersecting each
other in the head; a singular phenomenon of disordered and healthy vision, that this
decussation or crossing takes place only with respect
to those parts of each nerve which lie towards the other;
so that each supplies the outer half of one eye and the
inner half of the other. This be conceived would explain,
among other things, the correspondence between the homo-
logue points of the two eyes, which may be defined as those
points which see the same object at the same time.
It is scarcely possible to verify such speculations by dissec-
tion; for the homogeneity of the parts. In fish* the optic nerves cross each other entirely
without touching; and in man, when the sight of one eye
has been lost, the nerve beyond the point of union within
the cranium has been observed to be wasted or destroyed on
the side corresponding to the injured eye. [Dray;
Nay]) Beyond the point of junction the nerves
diverge from each other, and passing into the optic foramen,
become invested in a tough, flexible, and fibrous sheath, which
is a tubular production of the strong membrane
called the dura mater which invests the cavity of the skull.
The outer part of this sheath is reflected off as the nerve
ers the orbit, and expanding, adheres to the bony surface
of that cavity throughout, becoming its periosteum. The
nerves, continuing to diverge, reach the eye-ball after a
somewhat an inch in course of an inch, and in the manner
and laxity of the optic never give facility to the
movements of the globe, and preserve the delicate struc-
tures within it as well as the nerve itself from the injurious
effects of tension. Its length is such as to allow the eye-
ball to project slightly beyond the edge of the socket
front and to afford space behind for the action of the
muscles which move it, and a suitable distance between
their points of attachment. Including the thickness of the
sheath, it is about one-sixth of an inch in diameter. It does
not consist of a bundle of separate nerve fibres, but of a medullary plexus
induced in minute transverse
fibres. The sheath is pierced half an inch from the globe
by a vessel called the arteria centralis retinae, which, accom-
panied by several small veins, reaches the axis of the nerve,
and passes with it into the interior of the eye. The nerve
does not enter the back of the globe exactly in the axis of
vision, but about the fifth part of an inch from it, in a
horizontal line, on the inner or nasal side, and subtending an
angle of about 25° at the centre of the eye. At this point
the dimensions of the sheath are suddenly contracted, and
it terminates in a thin cul-de-sac, pierced with minute holes
or pores, hence called the lamina cribrosa (sieve-like plate).
Through these pores the pulp of the nerve, divested of its
tubular involucre, passes into the interior of the globe in
divided portions; but immediately reuniting, expands at
the back of the eye into a delicate cup-shaped membrane,
with the concavity directed forwards. This expansion of
the optic nerve is called the retina; it is the most impor-
tant part of the eye, having a peculiar and exclusive sensi-
tivity to the impression of light, which immediate notice
is conveyed from it along the collected nerve to the brain.
All other parts of the mechanism of vision are subordinate
to this; and their whole office, independently of the con-
servation of the organ as a part of a living body, is to regu-
late the quantity of light admitted into the eye, and to di-
tribute it in such a way upon the surface of the retina, that
the impression, which, if immediately received, would be
confused and general, may be an exact counterpart of the
visible surface of the object.

Mechanism of distinct Vision.—A specific account of
the several provisions which conduces to this end will be
more readily apprehended if the circumstances which make
each of them necessary be first briefly passed under review,
and the requisite parts be supposed to be added to the retina
succession.

The most elementary fact that we know respecting light
is, that it proceeds in straight lines or rays from every
point of a luminous or illuminated body. A sensitive
surface or retina presented nakedly to such a body would
immediately become overspread with impressions, each
diverging from a different point of the object. But
each point of the retina must also be considered in that
ease as the apex of a cone of rays converging upon it from
every part of the object; and it is manifest that the various
impressions thus received at one and the same
time would be indistinguishable from each other.
All therefore that we can conceive to be communicated to the
mind by the sum of such indefinite impressions over the
whole retina, is a knowledge of the prevailing colour of the
object, and possibly a general idea of its direction. But if
there were more objects than one, or that one had 'parts or magnitude,' even this inconsiderable addition to the mere
sense of light and colour would be impossible. The
conclusion resulting from the simultaneous impressions of a
multitude of points of light on the same surface would be
partly removed if the seat of perception were placed at
the bottom of a cavity capable of being turned to each
object or each part of the same object in succession, inas-
much as this would prevent the interference of rays
projected from parts not actually under contemplation; but
an indistinctness would still remain in proportion to the
magnitude of the field of view, only remediable by narrow-
ing the cavity to a mere capillary tube, upon the inconve-
ience of which we need not enlarge.

Let us consider what would be the effect of a very simple
addition to the cavity. We will suppose it to be closed
front by a dark screen, perforated with a small central hole
as in the section represented in fig. 1.

In this case pencils of rays crossing each other from A
and B, the top and bottom of an object, would impinge at
about 6 upon different parts of the retina; and thus the
advantages of a large and a small field of view would be
combined, a distributed impression of the object would be
produced, and its several parts would be seen separately and
in their proper relative situations. The effect may be
easily shown by holding a card, pierced with a smooth circular
hole, near a taper, and throwing the spectrum upon a wall
at a little distance. Such a screen is termed the iris.

* Taken in the budwack (Cape moss). D. W. Summerring. * Sect. Hori-
zen. In this they do not cross each other, but pass to the orbit
in the same...
But still the rays from each point of the object would be diffused over a space, instead of being collected upon a separate point of the surface, and the impressions of contiguous pencils would in some degree overlap and confuse each other. This inconvenience might be lessened by contracting the opening, but another cause of indistinctness would then be introduced in the diminished admission of light.

Both evils might be avoided if a lens of a proper construction were fixed behind the screen (as in fig. 2). Pencils diverging from single points of the object would thus be admitted through the opening, which we will call the pupill, and would be made to converge to single points on the surface, and the impression would now be an exact counterpart. A being distinctly seen in its true place and direction from a, and B from b.

But additional provisions would be necessary to bring this arrangement to the requisite degree of perfection. In the first place the retina must be adjusted to correspond in shape with the focal distance of the lens. This purpose might be accomplished, if the walls of the cavity were composed of flexible materials, by interposing a transparent fluid between the lens and the retina, which, by its uniform distension, would constrain the latter to take and retain the form of a portion of a sphere.

Again, although the diagram has been otherwise drawn for an obvious reason, our arrangement hitherto opposes the object to he very small, and to be seen directly in front of the eye; but if oblique as well as direct pencils are to be brought to a focus, that the lateral vision may be also distinct, a second refracting body, of a proper form, must be placed in front of the lens. This may be done very conveniently, with the further advantage of completing the cavity, by adding a transparent portion to its walls in front of the screen, to be likewise distended with fluid in order to keep it in the shape of a segment of a sphere (fig. 3).

It is also desirable that the back of the screen and the interior of the cavity should be blackened, that the rays may be extinguished after impact upon the retina, lest any internal reflection should interfere with the impressions on other parts. The expediency of this provision is always kept in view in the construction of optical instruments, and may be made evident by looking at a bright object through a polished metal tube. The colouring matter is called the pigment migrum, or, simply, the pigment.

The only remaining article to secure the perfection of the organ that need be mentioned in this synopsis of its most essential provisions, is to endow the pupil with the faculty of contraction and enlargement according to the quantity of light. If it were of a constant size, more light would be concentrated upon the retina from a bright or a near object than from one comparatively distant or faintly illuminated; and as the sensibility of the retina must remain the same, the disproportion would occasion dimness of sight in one case and dazzling in the other, and might even impair the nerve.

We have thus imagined all the parts to be built up in succession that are of primary importance (as far as we know) in the construction of an organ of distinct vision, and the figure to which we have arrived might pass as a tolerably correct diagram of the human eye.

The laws of light and sensation require that there should be a general type in the structure of these parts, and a mutual relation among them as to density, form, and position. But this does not preclude much variety; a difference of position, for instance, may be, and frequently is, compensated by a corresponding difference in form or density either of the same or other parts. Hence the problem of distinct vision has many solutions, each perfect in its kind.

In fact nothing can be more diversified in unimportant particulars than more uniform in those which are essential, than the interior constitution of the eye in different animals: it is never precisely the same in any two species, however closely they may be allied; but we constantly find the retina, the lens, and the pigment, and generally the iris, enclosed in course in some kind of capsule, transparent in front, and partly occupied by complementary fluids. To this there are some exceptions, which however we believe to be only apparent. Thus the larve of many insects, the cecreote, and other microscopic animals, and some of the molluscs, have red or black spots upon their surface, which are undoubtedly eyes, and are thought by some to be little more than expansions of an optic nerve beneath a thin coloured membrane to absorb the light, and in some unknown way to distribute its impressions. But when observation fails us, our presumptions with respect to natural phenomena should be guided by analogy and accord with known principles; and as nothing that we know of light enables us to conceive how so inartificial a construction as this can account for the acute vision obviously enjoyed by some of these animals, we are disposed to adopt another view of such coloured points, and to consider them as a congeries of extremely minute but perfectly formed eyes of the usual construction, of which the pigment is visible from its opacity and abundance. The myriads of simple eyes observed under the microscope to be grouped together in the compound organs of the perfect insect and other articulated animals, as the scorpion and crab, afford strong analogical grounds for this opinion.

We now resume our account of the anatomical structure of the human eye.

Globe.—The globe, or eyeball, contains the parts immediately concerned in vision. It consists of very unequal portions of two spheres of a different size, which have a common circular intersection in a transverse vertical plane, much nearer the front than the back of the eye. The iris, or coloured screen, perforated centrally by the pupil, nearly occupies the situation of this imaginary plane, but is, strictly speaking, behind it. The posterior and larger portion is circumscribed by the sclerotic membrane, except in front, where it may be considered as bounded by the iris: it is rather less than an inch in diameter, and consists about five-sixths of the surface of the globe. (Fig. 4, a.) The included space is occupied by the choroid membrane and retina, the vitreous and crystalline humours, the ciliary body and processes, and a small part of the aqueous humour. The anterior portion, which forms about a quarter of a sphere, is divided into three parts by an inch in diameter (Fig. 4, b), and occupies the remaining sixth part of the surface of the globe, contains the rest of the aqueous humour, and is bounded in front by the transparent and slightly prominent disc set in the sclerotic like a watch-glass in its metallic rim, and known as the cornea from its horny texture. Its transverse chord, or the diameter of the circle of union be-
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section of the globe of the right eye through the optic nerve.

Fig. 5.

The sclerotic membrane is so called from its toughness (example: hard, rigid). It may be considered as an expanded prolongation of the sheath of the optic nerve, which it resembles in its interwoven fibrous texture. Its inner surface is continuous with the lamina cribrosa already mentioned. Immediately round this part it is about an eighth of an inch thick, and gradually becomes thinner as it approaches the cornea, which it slightly overlaps. The two structures are not separated by an abrupt line, but are blended together, and adhere so closely that they cannot be torn without great force. The thin glistening tendons of the muscles which move the globe, or rather their smooth outer sheath, are spread over and incorporated with the sclerotic in front, approaching each other till they unite near its junction with the cornea. They render it somewhat thicker in this situation than in the spaces between them or behind the line where they begin to be inserted. This front part of the capsule of the eye is called the tunica albuginea, from the whiteness characteristic of all tendinous parts.

Conjunctiva. The albuginea is defended from contact with the air by a transparent mucous membrane, continuous with that which lines the interior of the eye-lids. It is called the conjunctiva oculi, or conjunctiva oculi, to distinguish it from the conjunctiva proprii of the lids. It is very loosely attached to the sclerotic at first to facilitate the movement of the globe: as it advances forward it becomes more closely attached to the albuginea; and hence extending to the cornea, adheres intimately to its margin and over its whole surface. The conjunctiva is the most sensitive external part of the body to all painful impressions, except cold, especially where it invests the cornea. The smallest particles of foreign matter in contact with it gives intolerable pain, and makes the act of winking to clear it away imperative on the will; and hence its chief and most essential use as part of the delicate organ of vision may be considered to be as the guardian. If for nerves which supplies it with sensibility be divided or injured, incidental causes of irritation are suffered to produce their injurious effects unheeded, and the eye soon becomes inflamed, ulcerates, and is destroyed.

Cornea. (Fig. 5, b.) The cornea is somewhat thicker than the sclerotic except at the back of the eye, is equally tough though rather more flexible, and of a much closer and more even texture. Its inner surface is concave, and nearly parallel to its outer surface; it is however rather thicker in the middle than elsewhere, and the general statement that it has no share in effecting the convergence of incident rays on account of the parallelism of its surfaces is therefore not quite correct. It is covered externally, as we have already mentioned, by the conjunctiva, which lines its inner surface and is somewhat transparent. The bulk of the tunic, or cornea proper, consists of several layers which slide upon each other when the membrane is rubbed between the finger and thumb, and are separated in the natural state by a fluid fluid contained in its structure. This fluid gives plumpness to the outer surface, which is represented by some authorities to be not exactly spherical, but of that kind which would be formed by the revolution of an ellipse of small excentricity about its long axis.

Chorioid or Choroid membrane. (Fig. 5, c, Fig. 6.) We have now to consider the internal tunic of the eye, the first of which is the chorioid, or, more properly, chorioid membrane, so called from some resemblance in the flocculence of its outer surface to the chorioid or external investment of the ovum. This is a thin soft dark-brown structure in contact with or lining nearly the whole concave surface of the sclerotic. It may be said to originate around the entrance of the optic nerve, which passes through it before it expands into the retina; and it terminates in the posterior margin of the ciliary ligament or circle (fig. 5, a), a flattened band of grey matter, about the seventh part of an inch in breadth, attached to the sclerotic internally near its junction with the cornea. In these situations the two membranes adhere with some firmness; they are elsewhere connected by vessels which pierce the outer and ramify upon the inner membrane, and by the filaments of a fine intermediate cellular tissue. But the connexion is so slight that it may be readily broken by gentle inflation with a blow-pipe iminated through a puncture in the sclerotic, without injury to the fragile texture of the choroid. The choroid consists almost entirely of a multitude of minute vessels, curiously interlaced, and communicating freely with each other. It is supplied with blood by 15 or 20 branches of the ophtalmic artery, which pierce the sclerotic round the entrance of the nerve, and are at first distributed externally on the posterior part of the sphere; but they finally pass inwards and terminate in a close and uniform vascular expansion over the whole concave surface. This is the tunica chorioides, or choroid, from the eighth, chorion, or cover, and venae vorticosae, are arranged with great elegance and regularity in arched and dropping branches, like the boughs of the weeping willow; they are very conspicuous upon the outer surface, as the first expansion of the branches of the arteries. (Fig. 6.) They unite in four or five common trunks, which emerge through the sclerotic at equal intervals behind the middle of the eye-ball. The outer surface of the choroid is somewhat rough and flocculent; its inner surface, upon which the retina expanded, is delicately smooth and even. Both are abundantly covered with the pigment, which is secreted by every part of the choroid, and pervades its loose and porous texture.

Pigment.—In many of this matter is a deep brown colour; in most other animals it is black, and hence is very commonly called the pigmentum nigrum. It appears under

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the microscope to consist of hexagonal particles arranged side by side like the cells of a honeycomb. It adheres very loosely, so that when the surfaces covered with it are drawn to and fro in water, it becomes diffused, and maybe washed off. The choroid thus treated is found to be of the same whitish or grey colour which characterizes the external coats of the retina. The parts of it not occupied by the choroid, but the cellular tissue on its external surface, and the inside of the sclerotic, are deeply stained by the pigment, which shows through, and occasions the bluish tint of the white of the eye in persons of delicate complexion. But on the inner surface of the choroid, the pigment is retained by an extension finer than a spider's web, yet of close texture, which may be called after its discoverer the membrane of Dahlrymple. This means the transparency of the retina is preserved. It is probable that this membrane of the pigment is of a fibrous kind, as it is reflected at the optic and ciliary margins of the choroid, and passes over the whole posterior surface of the retina;—thus doubly defended from absolute contact with the pigment. The choroid is not the only part which secretes the pigment; the whole thickness of the retina, in the region of the optic disc, has an abundance upon the back of the iris, on the surfaces of the ciliary processes, and in fact wherever it is wanted to facilitate vision.

Tetrataeniurn. In many animals, especially the mammals and carnivorous tribes, the pigment is deficient at the bottom of the eye, and the surface of the choroid in that situation presents a brilliant colour and almost metallic lustre. This is called the tagtium (tapestry of divers coloured). It is of various shades of white, green, and yellow; sometimes to be seen spotlike, but sometimes so beautifully arranged as to resemble a spider's web, whilst the shot with silvery whiteness. The tint occupies various portions of the surface; it is most brilliant immediately opposite the pupil, and passes gradually into the dark hue of the pigment. There is no vestige of a tapetum in the human eye: the use of it is not well known. It probably causes the animal to see better in the dusk and less clearly in the day, by reflecting the rays a second time through the retina. This reflection from a very effective concave mirror produces an image of the retina, which passes through the pupil, and is the cause of the well-known glare of the eyes of cats and other animals seen in an obscure light from that particular distance at which the emerging rays are most completely brought to a focus upon the eye and by this means produce a bright spot in the field of vision.

Retina. The optic nerve, having entered the interior of the globe through the sclerotic and choroidal membranes, forms a slight membrane at the bottom of the eye in several portions, and thence spreads out in the form of a fine transparent membrane over the whole conjunctive surface of the choroid, embracing the transparent body called the vitreous humour. Towards the choroid it appears to consist of a bundle of fibrous pulp-nerves, which reach from the cutaneous matter of the brain; but it is undoubtedly so elaborately and minutely organized. Analogy would lead us to suppose that it has a fibrous arrangement, and recent observations of great merit with the microscope appear to lead to the same conclusion. Towards the vitreous humour it has the structure of a most delicate vascular web, consisting of innumerable ramifications of the central artery (which, as we have already mentioned, accompanies it into the interior of the globe and of its associated veins. Its name may have been bestowed upon it from the supposed formation by visible branches of these vessels: at least it is not otherwise applicable to the structure of the membrane. The distribution of the central artery may be made visible to the eye by a curious experiment first suggested by Buring. Place a piece of glass in front of a large uniform dark or neutral tint, such as a wall painted of a lead colour, and the other eye closed by the hand, the flame of a small wax taper is to be slowly waved round and round, so as to be brought at every turn within the shadow, and at a distance so small as to be seen only by the vitreous humour. The central artery will gradually come into view, at first obscurely, and afterwards more clearly. The experiment succeeds best after the experience of several trials on successive nights. The cause of this might be expected from a brain-long network of vessels: the lines are dark, with bright edges on a faintly illuminated ground. There are other modes of making the experiment, which show the appearance to be directly, but the last less simple. We shall offer an explanation of this experiment in treating on the physiology of vision. The retina terminates anteriorly in a thin scalloped edge, fitting into corresponding irregularities called the ora serrata in the posterior margin of the choroid: hence the eye is called a bright yellow spot, fading gradually out at the edges, and having a black point in the centre precisely where the axis of direct vision intersects the back of the eye. (Fig. 5, n.)

This central point was identified by its discoverer, Soemmering, to be an actual deficiency of the substance of the retina; and it is generally called in consequence the foramen of Soemmering. But it is now known to be merely a central absence of the yellow colour of that part of the retina rendered conspicuous by the pigment seen through the ordinary transparency of the matter. These appearances are lost very shortly after death, and are replaced by a minute fold, into which the retina gathers itself, reaching from the place of the central point to the prominence which marks the union of the divided portions of the nerve. The use of this yellow spot and central point, and of the tendency of the retina to assume a folded shape in this situation, is not understood. It has been suggested that the group of appearances is a rudiment of the yellow dye of the retina called the periure in birds, of which we shall give some account in the next part of the work. It is seen only in the eyes of man, the quadruped, and some lizards.

We have already described sufficiently the sensory membrane which lines the posterior surface of the retina, supposed to be a reflection of that which remains the pigmented lining on the surface of the retina. It may be the truth as to this supposition, there is no doubt of the existence of the retinal membrane, which was discovered by Dr. Jacob of Dublin, and has been named after him.

Vitreous Humour. (Fig. 5, e and 7, d.) The part next in order to be described is the vitreous humour, which the retina is disposed. It is a transparent fluid of serous, limpid consistency and high refractive power, constituting the body of the eye. It consists of a fluid differing in no great degree from water, contained in a cellular structure called the hyaloid membrane, (σαλακ, glass), from its perfect transparency. The many cells are connected together; for if the external part be cut away, the fluid will gradually drain away. This cellular structure is so delicate and fragile that it is almost impossible to obtain it separately, but the membraneous partitions are rendered slightly opaque by strong spirits or diluted acids, and may thus be made evident. It is condensed into a membrane of finer consistence upon the surface, which serves the general purpose of a containing capsule for the vitreous humour, and is strong enough to cause it to preserve its shape in some degree when the stronger tints of the eye are removed. There is a narrow tubular strip of dense membrane in the vitreous humour opposite the entrance of the optic nerve, lined by a trumpet-shaped production into it of the external depth of the hyaloid canal, called the hyaloid canal. (Fig. 5.)

It serves to transmit a branch of the retinal artery and a pair of veins for the nourishment of the capsule of
in the lens, and perhaps also of the hyaloid membrane, and of the substance of the lens itself. There can be no doubt that the vitreous humour is secreted by the surfaces of the hyaloid cells, but this fetal artery is the only vestige of a vascular arrangement yet discovered in the part.

**Fig. 8.** Magnified view of the lens, showing its laminated and fibrous structure, and the direction of its planes of cleavage.

**Lenses or Cristalline Humours.** (Figs. 5, 7, a, 8.) The crystalline (spöraétaéa, crystal) is imbedded in a deep depression in the front of the vitreous humour, a little nearer the nasal than the temporal side of the globe. It has the form and function of a double convex lens. The surfaces may be considered as portions of two unequal spheres, the anterior being considerably flatter than the posterior. The diameter of the sphere of which the former is a segment is about eight-twelfths, of the latter five-sixths of an inch. The thickness of the lens, measured in the axis of vision, is about the sixth part of an inch, and its transverse diameter is about twice that length. (Fig. 4. c, d, d.) In refractive power it is superior to the other transparent substance of the eye. It not only hardens the crystalline humour, but renders it opaque; and the same effect is produced by plunging it in boiling water, as every one must have observed in the eyes of dressed fish. In fact, it consists chiefly of the transparent substance called albumen found in eggs, and is compounded by heat in the same way. The lens is similarly constructed in the eyes of other mammals; and analogous, though not identical, arrangements are observed in other classes. In fish the fins we have spoken of are curiously hooked together by the teeth, resembling those of a saw. We chiefly owe the discovery of these facts respecting the intimate structure of the lens to the labours of Leeuwenhoek, Young, and Brewster, whose writings may be consulted for much further information on the subject. The lens is enclosed in a transparent and highly elastic membranous capsule, represented in fig. 5. by a white line, to the regulated pressure of which the preservation of its true shape, so important to the purposes of vision, is mainly attributable. The membranous capsule is the natural lining of the cornea already mentioned, which closely resembles it in its function with reference to the surface of the aqueous humour. When the lens is hardened in spirit or boiling water, this capsule retains its nature; and if peeled off, shrivels up and contracts in itself. Whether it is possible to separate it from the lens without any further connection than that of mere contact with its own contents, is not easy to show, or to doubt; but the nature of that connection, if any exists, might be expected to be obscure, considering that both the parts are diaphanous, and one of them almost liquid at the surface of contact. Indeed it has been supposed that a small quantity of limpid fluid was actually interposed between the lens and its capsule, but this is now shown to be the result of confusion after death.

Besides its posterior attachment to the hyaloid membrane, the lens, or rather its capsule, has connections with other parts which adjoin it laterally in front: the nature of these will be best understood if those parts be first briefly described. At present, we shall only remark upon it further, that the gradual increase in the density of the aqueous humour is proportional to the distance of the point of contact from the lens. The lens, like a pair of highly refractive lenses, admits of accommodative power, which results from the too great refraction of the lateral rays of a pencil of light in passing through a homogenous medium, such as glass, if bounded by spherical surfaces.

**Aqueous humour.**—This fluid, in no respect distinguishable from water except in holding a minute proportion of several sallín, ingredients in solution, occupies the space between the lens and the cornea. The iris divides this space into two unequal portions called the anterior and posterior chambers of the eye, and so closely approaches the lens that the margin of the pupil the two surfaces are separated by a mere film of aqueous humour. The cavity is lined throughout by a serous membrane which secretes and limits the fluid, and prevents it from setting injuriously upon subjacent parts of importance. At least a membrane of this kind may be pealed off in some animals; its existence in the human eye is, we have seen, across the aqueous humour in the form of a thin partition with a round aperture, or pupil, of variable size in the centre, or a little nearer the inner side, the function of which, we need hardly repeat, is to regulate the quantity of light admitted into the eye, by contracting when it is in excess, and dilating when it falls short of the due amount.

**Iris.** (Fig. 5, b, 9, b.) In speaking of the choroid we have already adverted to the flattened ring called the ciliary ligament (Fig. 5, f) which connects it in front with the sclerotic. The iris arises from the anterior margin of this ring, and is extended, as we have seen, across the aqueous humour in the form of a thin partition with a round aperture, or pupil, of variable size in the centre, or a little nearer the inner side, the function of which, we need hardly repeat, is to regulate the quantity of light admitted into the eye, by contracting when it is in excess, and dilating when it falls short of the due amount.

**Fig. 9.** Magnified view of a vertical section of the globe, showing the ciliary body and processes with the uvea, as seen from behind when the lens is removed.

a. Pupil; b. uvea, or back part of the iris; c. processes of the ciliary body; d. ora serrata of the ciliary body, to which a few vessels of the vascular web of the retina remain attached.

The external appearance of the iris is too familiar to need a particular description. It is covered in front with a glistering polished membrane. The brilliancy of the eye depends in a great measure upon the light reflected by this surface, and is lost when its smoothness and transparency are impaired by inflammation. The posterior surface of the iris is called the uvea. (Fig. 9, b.) It is thickly coated with pigment, which is prevented from diffusing itself in the aqueous humour by a membrane like that of Därumpel on the choroid. Such a provision is particularly needed here on account of the quick movements of the part in a watery fluid. The colouring matter of the iris has much analogy with the pigment. Like that substance, it forms
no part of the texture it pervades; and when the outer membranes are removed by maceration in water, it may be washed away. Both have a relation in quantity as well as in depth of tint to the complexion and colour of the hair. In the negro the pigment is of so dark a hue that it can scarcely be distinguished from the pupil; while in the white rabbit and other albinos, including the human variety, where the pigment is entirely wanting from some original malformation, the substance of the iris is transparent, and reflects only the blue of the eye. The circular muscles are dizzled by a strong light, and probably see better than others in the dusk. The iris, if minutely injected, appears, like the choroid, to be composed almost entirely of vessels. It is principally supplied by the two long ciliary arteries (Fig. 5, a.), which are the terminal branches of the anterior ciliary, the retina, and is wholly distributed to the iris. Their branches are disposed in two conspicuous circles on the front surface, one near the outer or ciliary margin, the other not far from the pupil. But though the iris resembles the choroid in vascularity, it differs essentially from it in other respects. It is richly supplied with nerve fibres, and it is disd as well as much in the same way as the arteries, and are the medium of its sympathy with the retina, and the source of its irritability. It also possesses a peculiar contractile power, thought by some to reside in fibres which they believe to be muscular, and disposed particularly in front and at the corneal edge, and in a radiated form behind. (Fig. 9, b.) The former of these layers is supposed to contract and the latter to dilate the pupil. But this fibrous appearance may be deceptive, and is attributed by others to the presence, in the outer zone, of a system of minute vessels, and to streaks and minute folds in the membrane itself.

Pupil. (Fig. 9, a.) The pupil in the human eye is bounded by a sharp well-defined circular edge. In other animals its shape is subject to many varieties which are most easily explained by a reference to their habits and circumstances. In fish it is generally crescentic or imperfectly quadrangular. In herbivorous animals, which often continue to browse during the night, it is oblong and obliquely transverse. In the horse and the same carnivorous and many rapacious quadrupeds, both aquatic and terrestrial, the pupil, though round and large at night, is a mere vertical slit when seen by day, especially in the smaller species of each genus, as in the common cat. It is curious that in the larger pets, at the time they sleep, as well as in some of the larger four-footed reptiles, the pupil again becomes circular. In all birds, we believe, the pupil is round; and it may be observed that, with few exceptions, they all sleep after night-fall. In the few nocturnal species, as owls, the pupils are very large at night. These animals always shun the day. The long narrow pupil in fact a provision for a greater variation in size than the circular form permits, and is generally found in those animals which roam at night and also see well by day.

When absent in such animals the bulks of the organ is commonly sufficient to secure the admission of a sufficient quantity of light after sunset without this provision. In the fetus the pupil is closed by a vascular film called the membrane pupillaris, one function of which is precisely that of the constriction of the iris to support and extend the lens during the process of its construction. A tubular film of the same kind has been lately discovered by Müller stretched between the margin of the pupil and the ciliary body, and is termed the fortieth week of pregnancy.

Ciliary body and processes. (Fig. 5, l; 9, d.) Upon the compressed anterior surface of the vitreous humour where it curves inwards from the sclerotic towards the lens rests the ciliary body, a thin, dark, annular band, about the fifth part of an inch in breadth, consisting of a mass of delicate, irregularly configured tissue. Consisting of the inner layer of the iris near its junction with the lens. It appears to be a continuation of the inner layer of the choroid, or tunica of Ruyssch, but is rather thicker, and resembles it in extreme vascularity. The modulatory matter of the retina terminates, as we have seen, at the intedent posterior margin (or serra) of this membranous band. The ciliary body is everywhere thickly coated and pervaded with pigment, except at the extremities of about seventy minute nodal processes with the inner margin, and radiates towards the lens much like the florets of a margarild round its central disc. These are the ciliary processes. (Fig. 5, k; 9, c.) They are separated from the uvea by the fluid of the posterior chamber, and are received behind into corresponding sinus. Such aqueous streams on passing through the pupillary membrane.

Zone of Zinn.—If the ciliary body be carefully peeled off, and the thick radiated masses of pigment it leaves behind be washed away, a thin, transparent, and puckered membranous surface is exposed, extending from the red reflex to the posterior surface of the lens, and half a degree beyond the corneal opening of the pupil. Such a surface is separated from the lens by a narrow space, it appears to be something more than the mere external surface of the hyaloid membrane. This is called the zone of Zinn, from the anatomist who first drew attention to it. It is extremely delicate, and is most easily visible when the eye is somewhat over the tip of the nose. It is generally seen by the eye by some it is supposed to be a continuation of the vascular web, which may be called the internal tunic of the retina, arching round from the ora serrata, just as the tunica of Ruyssch is continued into the ciliary body which lies upon the surface of the choroid; in a sense this term is more correct, and it is given to the surface of the retina.

Canal of Petit (Fig. 7; b; 5, m.) If the transparent membrane between the zone of Zinn and the margin of the lens be slightly punctured, and the point of a small blow-pipe be gently introduced, a canal may be inflated extending all round the outer edge of the choroid, and resembling a string of small glass beads laid in a circle. This is the canal of Petit. Whether the hyaloid membrane here separates into two layers, or whether the membrane of the aqueous humour lies upon it in this situation for a certain space without being separated, or whether it is to be considered as a layer of the retina, is a matter of some importance. For the point of the blow-pipe is easily visible in a minute protruberance. But the points are light, and floating, and are not attached, as was formerly supposed, to the capsule of the lens.

Dr. Brewster has stated an opinion that the ciliary body is a muscular organ calculated to effect certain changes of curvature in the surface of the lens, or in the shape of the eye, which seem to be required by the laws of refraction to counter for the adjustment of the eye to different distances. Dr. Thomas Young was no less confident that the true solution of this optical enigma was to be found in the immediate actions of the ciliary muscle itself upon the minute parts of the lens. Both are high authorities, but neither opinion appears to have gained any ground.

Appendages of the Globe.—The eye-ball, of which we have thus described the contents, is lodged in the cavity of the globe or orbit, a little larger in the horse than the eye of domestic animals. The orbit is surrounded by a strong bony wall, where the protection of bone is wanting, the two movable and muscular eye-lids supply a sufficient defence, and contribute, by their gentle and constant pressure, to keep the eye in that state of equilibrium between opposite forces upon which the accurate and precision of its rapid motions in a great measure depend. The space in the socket not occupied by the globe and its appendages is completely filled by a cushion of fat contained in elastic membranous cells, which permits the free movement of the eye in all directions. It keeps the eye free from the dust and other obstructions that may reach it, and is at the same time flexible enough to accommodate the eye to different positions. The unguis of the horse, for the globe itself is nearly of the same size in all.

Muscles of the Eye-ball.—The movements of the globe are effected by six muscles arising from the bony surface of the orbit and inserted into different parts of the sclerotic. Four are called recti, that is straight, and are inserted in the axis of the globe; the fifth and sixth are the obliqui superior and inferior, so called from the obliquity of their insertion, and their respective positions above and below the globe. The fifth, or superior, is also called the trochlea, from the trochlea or pulley through which the tendon passes.
The recti (Fig. 10, a, b, c, d) are four flat ribbon-like muscles, each about half an inch broad, which arise together at an equidistant points, about a quarter of an inch from the inner corner, above, below, and on either side. Each of them acts as the superior, inferior, internal, and external straight muscles. We have already explained how the outer surfaces of their tendons are blended, and form the tunica albuginea. Each turns the pupil towards the side of its insertion; and it is easy to see how, by their single actions, or by a proper combination of two that are contiguous, the pupil may be turned in any required direction. The rectus externus, from its position on the diverging side of the orbit, is necessarily the longest of these muscles. It also has also a distinct origin, and acts not only in common with the rest from the edge of the optic foramen, but also from the edge of the sphenoid fissure, and arches over several nerves which enter the orbit by that passage (p). The superior oblique or trochlearis (e) is a round tapering muscle, which arises on the inner side of the orbit, some distance below the superior rectus, and gives origin to the round tendon. The rectus externus, and nearer the former, its separate action turns the pupil downwards and outwards. The inferior oblique (f) arises broad within the lower edge of the orbit towards the nasal or inner side, and passes through one of the insertions of the inferior (b), is attached to the sclerotic at the outer and back part opposite the insertion of the trochlearis. It directs the pupil upwards and outwards, supposing the eye to look originally straight forwards: if the pupil be inclined either way, to the nose or to the temple, the inferior oblique increases that inclination, being equipedose to lateral action when the eye is slightly turned inwards, as in reading. But its tendency is always to turn the pupil upwards. To a certain extent the same remark is applicable (musculus medialis), to the horizontal rectus, which, if excited at the same time would counteract the tendency upwards, so that both taken together would keep the eye in that easy position so often assumed by men and animals in looking without much effort yet steadily at near objects, as in taking food, reading, and most other quiet occupations. The position we mean is that in which the axes of vision are directed slightly towards each other and a little downwards, and the eye-balls are gently pressed against the lids and by them, and thus kept in a convenient and steady equilibrium. When the oblique muscles act together with force, they hold the eye-ball firmly against the lids and to the nasal side of the orbit. The or both of these muscles, as well as the rectus externus, and supposed to be endowed with certain automatic or involuntary actions, very useful in the economy of vision. Their functions in this and other respects have given occasion to much curious disquisition.

**Muscles of the Eyelids.**—Immediately beneath the subcutaneous cellular tissue there is a broad layer of muscular fibres arranged elliptically round the transverse
fissure of the eyelids, the disposition of which is well shown in the annexed figure. (Fig. 12) The office of

Fig. 12.

View of the orbicular muscle of the left eyelid, as it appears when denuded of the integuments.

a. The tendon at the inner angle, or corners of the eye; b. the corneal canthus drawn in by the Excretory apparatus of the lacrimal punctum on the lateral side of the orbit.

This muscle, which is called the orbicularis, is to close the lids; and it is capable of acting under certain circumstances with great force. It is collected at the inner angle or canthus of the eye into a round short tendon, which is attached in that situation to the bone. Elsewhere it is connected with the skin, and spreads out expansively of the face and forehead. It is also connected with the levatorlabialis muscle, which elevates the eye brow, and with the corrugator supercilii, which wrinkles and knits them in the act of frowning. A person acquainted with mechanics will have no difficulty in perceiving the advantage derived from the oblique, or, as it might almost be called, the incident action of the orbicularis in closing the lids, to the edges of which its fibres are parallel. A more direct application of muscular force would have been more powerful; but the actual arrangement secures a rapidity incomparably more conducive to the function of the eye-lids, which is to cleanse and moisten the surface of the eye.

Levator Palpebrae Superioris. Below the orbicularis, in the upper lid, is the broad tendon of the muscle which elevates the upper lid. (Fig. 13, d; 14, g.) This muscle arises from the edge of the optic foramen, just above the rectus superior, and passing over it along the roof of the orbit, forms the thin tendon we have mentioned, which is inserted into the inner surface, or rather the thin upper edge of the tarsal cartilage. There is no such provision for depressing the lower lid, which is rendered unnecessary by its interior extent. Moreover the muscle we have just described sufficiently answers the purpose, by pressing down the globe and causing it to slide a little forwards; as may be easily felt if a finger be placed against the lower lid when the eye is closed, and suffered to remain while the upper lid is slowly raised.

Meibomian Glands. (Fig. 13, e.f.) Between the tarsus of either lid and the conjunctiva are disposed numerous vertical rows of minute whitish grains, which appear through the semi-transparent mucous membrane, and occupy an elliptic space, taking both lids together, of about half an inch in width, exactly in front of the globe. These are called the Meibomian glands, from their discoverer. They secrete an insipid matter which passes into tubes centrally placed in each row, and exudes from as many minute orifices on thecilary margin of the lid. (Fig. 11, c.) There are about forty of these parallel clusters in the upper lid: in the lower there are not so many, nor are they individually so long. We need not dilate upon the use of this secretion, which often collects in a sensible quantity upon the edges of the lids during sleep, especially when the glandular action is excited by slight inflammatory irritation of the part. The palpebral conjunctiva, already described, imparts muscles to these glandular corporules.

The caruncle, a small red prominence at the inner angle of the eye (Fig. 11, d) consists of a number of similar bodies.

Fig. 14.

a. The two palpebras leading into the lacrimal ducts; b. the common entrance of these ducts into the lacrimal sac; c. the head of the lacrimal sac; d. the nares of the sinuses, or membranes lacrimal canal passing downwards to the mucus, the lacrimal gland.

Lachrymal Apparatus. (Figs. 13, 14.) At the upper and outer part of the interior of the eyelid are several minute orifices (Fig. 13, a), generally seven in number, arranged in a half-circle, which lead into the secretory ducts of the lacrimal gland. (Fig. 13, b; 14, c.) This is a white flattened lobulated body, of the size of a large bean, lodged in a depression just within the margin of the orbit, and covered externally by the orbicular muscle. The function of this gland is to secrete the tears; and is probably always going on, although not in a degree sufficient to be remarked, except in weeping, or when some foreign body or aerial vapour stimulates the surface of the eye, and by sympathy excites the gland to unusual secretion.

The involuntary actions of the rectus externus and inferior oblique muscles, by which we have adduced, are supposed to have a relation to the lacrimal secretion. In the act of winking, the eye-ball is thrown up in an outward direction, as it would be by the action of these muscles, which not only brings the corne into the vicinity of the ducts, but makes pressure upon the gland, while it relatively increases the rapidity with which the lids, drawn in winking towards the fixed nasal tendon are swept over the surface of the globe. That there is such a movement, however produced, is certain: the motion of the prominent cornea may be felt by the finger gently pressed upon the half-shut lid if it be completely and suddenly closed. The approximation of the lids towards the nose in winking is one of several provisions by which offending particles or superfluous fluids are brought to the inner corners and are swept away. In this position there is a vacant space partly occupied by the caruncle, called the lacus lachrymalis (Fig. 11, d); it is a sort of reservoir or rather sink for the tears. Above and below, at the entrance to this space, there is a small prominence on the inner edge of both, (Fig. 11, a; 14, a.) centuriously punctured by small orifices. These are the puncta lachrymalis. Their inward aspect is well shown in Fig. 13. They are the emunctories of the
eye; and their function is to absorb the fluids presented to them, and convey them by two converging canals (Fig. 14, a) to the lachrymal sac (Fig. 14, c), which they enter by a common orifice, (Fig. 14, d). The membraneous bag about as large as a kidney-bean lodged in a groove in the lachrymal bone, behind the tendon of the orbicular muscle. The lachrymal sac entering a vertical channel in the bone at the end of the groove is narrowed into the lachrymal canal (Fig. 14, d), and passes directly downward into the inferior meatus or chamber of the nose which it enters on the outer side by a slit in the mucous lining. It is not exactly understood in what way the puncta absorb,—whether by capillary attraction or by some vital force of suction. The side of the lachrymal sac is connected with the tendon of the orbiculares, which may aid in producing the effect by suddenly drawing its membranous surfaces apart. We all know the effect of repeated winking when the eyes are filled with tears.

Nervous and vascular constitution of the eye.—Enough has been already said for general information. The eyeball is a sphere, with respect to the blood-vessels distributed to the eyeball, and it is not necessary to mention those which supply the appendages. With respect therefore to vascular arrangements, we have only to add, that although there are abundant proofs of this absorption, in the belief, that the anterior part of the eyeball contains no lymphatic vessels specially destined to that function which have hitherto been found in it. The optic or second cerebral nerve has been already described. All the straight muscles, with the exception of the rectus externus, the inferior oblique, and the levator palpebrae, are supplied by the third nerve. The fourth is wholly distributed to the trochleas, and the sixth to the rectus externus. The orbicular muscle is supplied, like most of those of the face, by the portio externa of the seventh pair. All these, except the optic, are muscular or motor nerves. The fifth nerve supplies the whole organ in common with many other parts with ordinary sensation. Any account of the intricate nervous construction of the iris would here quite out of place. The third and sixth nerves are mainly concerned in it. Thus of the ten cerebral nerves, the second, third, fourth, and sixth are wholly, and the fifth and seventh partially distributed to the organ of vision; a fact which may give some idea of the elaborate organization and varied exigen-
cies of the parts which compose it.

Comparative Anatomy of the Eye.—The eyes of insects and many other articulated animals, often consist (as we have mentioned before) of myriads of simple eyes grouped in one compound organ. The eye of the lobster is said to contain one hundred thousand. Such groups are commonly placed, one on each side of the head. The horned, rounded, naked, and transparent part seen externally represents the cornea. Its surface when viewed by the microscope displays as many hexagonal facets as the organ contains simple eyes. Beyond this facet is a mass of transparent, consisting of the lens. These cones are arranged side by side with their acute angles directed inwards, in the terminations of as many fibrils of an optic nerve. A chordoid pigment is spread beneath, and often separates the lentil like cones. Vestiges of the aqueous and vitreous humours are also frequently present. When the eyes are simple, as in the spiders, there are generally several, from two to twelve, placed on different parts of the head and thorax. The lens is of the usual spherical shape, hard and spatulated, and highly refractive. In fish and other aquatic animals the lens is dense, hard, and spherical, to make up in refractive power for the density of the medium through which light reaches the eye. On the other hand the cornea is flat, and there is little aqueous humour. Such provisions would be of no value; for as the refractive power of water is the same that of aqueous humour, rays penetrating the surface, however shaped, would pass on in the direction of their entrance. Fish are unprovided with cycoids, and the eyelids have little independent motion. The eyeball is a solid mass, and the structure is either the same between the layers of the choroid, the use of which is unknown. It is called the choroid gland. The ciliary body and processes are generally absent; but there is a rudiment in the eyes of fish of that part called the pecten in birds.

The eyelids of many reptiles and other mammals resemble the human organ in structure, and differ from it, but not essentially, in form. This is not the case with the appendages. One of the most remarkable additions commonly found to the parts we have described is that of a strong retractor muscle in the shape of a hollow cone at

[Fig. 15, 16, 17, 18, 19]

Horizontal section of the eye of an owl (Strix ovo.)

Fig. 15. EYE

Head of the same bird. A portion of the bony margin of the orbit having been removed, the eyeball is turned forward so as to show the recti and other muscles.

The general shape of the organ represented in the annexed figures resembles a bell. This arises from the disposition of a series of quadrangular bony scales (Fig. 15, a) within the substance of the sclerotic, concave on their outer aspect, and overlapping accurately fitted to each other. The rigidity of the eyeball is given by the external case which contains the fluid media prevents their pressure from distending the eye into a spherical shape. The ciliary body (Fig. 15, b) extends over the whole of this portion of the surface. A curious membrane called the pecten or comb (Fig. 15, e), from some resemblance to that implement, projects through the choroid into the vitreous humour, and in some birds is attached to the side of the lens. In the owl it is comparatively short. It resembles a quadrangular piece of choroid folded backwards and forwards upon itself, like the paper of a lady's fan. Of its use little is known. The foramen of Soemmerring, described in the account of the human retina, is thought to be a rudiment of the pecten. In birds the retina has generally the yellow colour seen only partially in man round the central spot miscalled a foramen.

At the back of the globe there are two muscles which originate from the sclerotic, and are applied to its curved surface round the entrance of the optic nerve (Fig. 17, a). The larger represents rather more than half of what is completed would be a broad circular ring (Fig. 17, b). It is called the Quadratus. Attached by its wider edge near the margin of this part of the sclerotic, its fibres converge to the narrower edge, and terminate in a narrow tendon (Fig. 17, c), perforated through its whole length like the horn of an apron. The second smaller muscle, called the annularis from its shape (Fig. 17, d), at an opposite part of the circumference. Its fibres converge, and are fixed into a long round tendon (Figs. 17 and 18, e), which passes through the loop or hem (c) of the Quadratus, and hence turning over the edge of the broad part of the sclerotic, is continued along the...
Apparent direction of objects seen obliquely. — A body in motion, as a ball, striking the surface of another, impresses it in a line perpendicular to the surface at the point of impact. This rule applies to bodies with respect to the action of light upon the retina. Indeed if impressions of any kind be made upon it, the sensation is that of light, and the direction suggested is that of a line joining the center of the impression with the point of which the action extends. The point impressed — in other words, a line perpendicular to it. This may be shown in several ways: if we excite the nerve by pressing far back upon the eyeball with the finger nail, especially if the eye be closed or light otherwise excluded, a bright ring appears to be seen in a diametrically opposite quarter.

Erect Vision. — If the sclerotic and choroid be carefully removed under water from the back of an eye, an inverted picture of any object held before the cornea is seen upon the surface of the detached retina, which affords a confirmation of the point raised in the age of philosophical barbarism, how is it that we see objects erect when the image on the retina is inverted? The question is an idle one, which is perhaps hardly worth answering. The mind judges of the apparent place of objects of different size by a combination of the impressions made upon the retina, not by the part of it which may happen to be affected by these impressions. The shadow of the central artery is an example of an impression necessarily received always upon the same part; yet the artery is not perceived. The truth is, that if both eyes see the object in the same place; and as two images, no more than two material substances, can occupy the same place at the same time, the impressions coincide and are single.

Disorders of the Eye. — We shall content ourselves in speaking of the diseases of the eyes, with a few remarks which may serve as an index to the separate articles upon the most important of those diseases.

Blindness may be produced in various degrees by injury or disease of the retina, as by light. Such affections are technically known as amaurosis, but will be mentioned under the more familiar title of Guttura Skena. The sight may also be lost by anything which destroys the transparency or opacity of any of the refracting media. [Cataract: Glaucoma; Myopia; Hypermetropia; Astigmatism; Articular: Ruptures; Syphilis. Information and ulterior affections of the conjunctiva, whether of the eye or lid, are called Orthalia. The diseases of the lachrymal organs, and a peculiar paralysis of the action of the muscles which elevates the upper eyelid, will be considered respectively under the heads of Fistula Lachrymales and Prost. Almost all affections of the eye, whether they result from injury or spontaneously, are liable to be extended from one eye to the other, so close is the sympathy between these organs.

EYK (in Optics). [Light: Optics.]
EYE, in botanic name, the name technically given to the bud of a plant. [EYELE, EYEL OE.] (See YOLK.)

EYMOUTH. [BERWICKSHIRE.]

EYLAU, more properly PREUSSEISCH-BILAU (Prussian Bilau), is a circuit in the Prussian administrative circle of Königsberg, having an area of about 460 square miles, with a relatively different population of about 2150 inhabitants, who manufacture woolen clothes, hats, leather, &c.

The name it bears has been given to it in order to distinguish it from Deutsch-Eilau, a town in the Prussian administrative circle of Marienwerder. An obstinate and protracted war between the French forces under Napoleon and the Russian forces under Bennigsen on the 7th and 8th February, 1807. After the combatants had lost 30,000 in killed and wounded, they withdrew their troops from the field.

EYRE (from Old Frisian, eira, "hedge"). The court of the justices itinerant who were regularly established, if not first appointed by the parliament of Northampton, a.d. 1176—82 Hen. II.—with a delegated power from the king's grace to try suits between and for the persons of clerks and laymen. They were probably the first to attempt to make the circuit round the kingdom once in seven years, but by Magna Charta, c. 12, it was provided that they should be sent into every county once a year. Their jurisdiction and mode of procedure were those of the great courts. They have been long superseded by the modern justices of assize. There was also a court so called which was held before the chief justices of the several forests, under the old Forest Laws. These courts were instituted a.d. 1184 by Hen. II., and were formerly very generally held; but the last of any note that was held was in the reign of Charles I., before the Earl of Holland, the rigorous proceedings at which are reported by Sir William Jones (Jones, i. 266). Charles I. endeavoured to make these odious forest laws a source of revenue, but after the Restoration, another Court of Eyre was held before the Earl of Oxford (North's Life of Lord Guildford, 45), it was merely pro forma, and since the Revolution, 1688, they have fallen into total disuse. There are still two officers appointed by letters patent (4 Geo. i. 291), who are called Chief Justices in Eyre, the one south, the other north, of Trent, whose duties perform some trifling and harmless functions connected with the royal forests in their respective districts—the offices themselves are sinecures.

Ezekiel, a prophet, is one of the principal books of the Old Testament, divided, in our English version, into 48 chapters, and placed next after Jeremiah's Book of Lamentations, and before the book of Daniel. Ezekiel was partially contemporaneous with Isaiah, and the account of his Prophecy is to be found in chapters xiii. to xxxvii. of the Hexateuch, and in several places in the Euphrates at Carchemish, about 300 miles north-west of Babylon. He is stated to have commenced his prophesying in the fifth year of his captivity (i. 2), about B.C. 596, and the duration of the Prophecy is given in chapter xxiv. 3, until the fourteenth year after the destruction of Jerusalem by Nebuchadnezzar. The pseudo-Epiphanius says that Ezekiel, on account of his aversion to adopt the Chalmaid manner, was put to death by the Jewish Prince or commander of the Prophecy. Rabbi Benjamin of Tudela states that his tomb is between the Euphrates and the Euphrates, in a vault built by King Jehoiachin, and that within it the Jews keep a lamp perpetually burning. The same writer asserts, with equal appearance of truthfulness and correctness. The original autograph, which they read every year on the great day of expiration. Greatly inconsistent with such venerable

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Erastus, Z., [Deut. 18:20].

Dr. Clarke asserted it is purity. The remarkable supposing...

The prophetic visions and revelations of the ancient Hebrews form the principal theme of each, but Ezekiel views them chiefly as affecting Israel, while Jeremiah describes them with especial reference to Judah. Ezekiel dealt with vehement indignation against the depravity of the priests, and against the Luxuria, which the prophets so often accused the people of, in order to make them shake off their Babylonian slavery. (Compare Jeremiah, chapters xxi, xxv, xxvi, xxvii, xxx, with Ezekiel, chapters xii, xiii, xiv). Parts of the book of Revelations may be compared with some portions of Ezekiel; Rev. iv, with Ezek. i, and x, respecting the cherubim with wings full of eyes; Rev. xi, xvi, xxii, with Ezek. xi to xiiin, describing the New Jerusalem.

That Ezekiel is a very obscure writer is asserted by all who have attempted to explain his prophecies. The ancient Jews considered them as inexplicable, and the council of the Chaldean uncles deliberated long on the propriety of excluding them, on this account, from the canon. (Gesenius, Pref. to Ezek.). But to prevent this exclusion Rabbi Ana-

na, in his Talmudic commentaries, called attention to the vision of the prophet's chariot (i. and ii.). His proposal was accepted by the council, and in order to enable him to accomplish his task, except interruption, three hands helped him with 30 harps of oil to supply his lamp during the course of his study. (Ezek. xvi, 10). The same relations are made to him in his connection with the Bible, and in repeating it in his

Succession of Sacred Literature,' he says that the quantity of oil was 300 hands. It was also alleged as a reason for repeating Ezekiel from the canon that he teaches, in direct contradiction to the critics, the propriety of the original excellency of the Jews, and of the Jews and the secular pricf.

This is admiring, says Dr. Clarke, how difficult it is to settle the text by a collection of MSS.: and, in accordance with the opinion of many other interpreters, he asks, that much remains to be done to render the Hebrew text perfect. (xxviii. viii. 12. Hence, as Michaelis, Eichhorn, Newman, and many other commentators, have written copiously on the peculiarities of Ezekiel's style. Grattius (Pref. to Ezek.) speaks of it with the highest admiration, and compares the prophet to Homer. But his admirers is bold, and the passion of Homer is highly exalted. Bishop Lowth (Pre-

lect. Heb. poet.) regards Ezekiel as bold, vehement, tragic; wholly intent on exaggeration; in sentiment bold, bitter, incident; in imagery magnificent, harsh, and almost deformed; in division grand, unsteady, rough, rude, menti-

vated; abounding in repetitions from indignation and vio-

lence. This eminent judge of Hebrew literature assigns to the poetry of Ezekiel the same rank among the Jewish writers as that which the Greeks and Romans assigned to the poetry of Homer. And speaking of the great obscurity of his visions, he believes it to consist not so much in the language as in the conception. Eichhorn (the peculiar character of whose criticism we have noticed under that article) regards the Book of Ezekiel as one of the most important and the most extraordinary of the apocryphal books. No other prophet, he says, has given such freedom to imagination. 'Every thing is dressed in figures, allegories, and visionary poetry. He is so used to ecstasy and visions that he adopts their appropriate language when he talks of the invisible. In accordance with the German rationalism he considers the prophecies as nothing more than the poetical fictions of a heated oriental imagination of a similar nature with the poetry of the book of Revelations. A remarkable characteristic of the poems of Ezekiel is their mere grace and minuteness of his descriptions. He considers the pro-

phets as a great original poet, but from his talent and hyperbo-

lised style he assigns him to the utter age of Hebrew literature. In rude indignation, violent energy, and disregard of de-

tency and disguise, the denunciations and descriptions of Ezekiel are said by Dr. Clarke to resemble the satires of Juvenal, and he would hardly have tolerated in the hand of the ancient Jews the deeds and the explanations are nearly as numerous as the exposi-

tions. However, only two appear to possess any consider-

able probability. "God, according to the first, was

Antinomous Epicures; according to the second, he was

Greeks; but the second exhibits a modern taste and

it has been elaborately shewn by Mr. Granville Penn that God is to

be recognized in the person of the Emperor Napoleon, and

Maecenas in the people or nation of France. His treatment on the subject, entitled 'The Prophecy of Ezekiel, con-

cerning Gozites, the last tyrant of the chieftains estab-

lished in 1815, is a production replete with curious learning and

argumentative ingenuity. (Commentaries of Baner, Doellerlein, Hozel, Michaelis: Dathie, Prophetur Majoris, 1785; Dr. Seiler, Ueber die Hebräer und die Ezechiel, 1795; Volz, Ezechiel aufs neueste aus dem hebräischen übersetzt, 1757; Bishop Newcome's Improved Version, Metrical Arrange-

ment, and Explanation of Ezekiel, 4to, 1788; Venetian Translations, 4th edition of Ezekiel, 4 to, 1791; the New French Version, by M. Agier, Les Prophetes modernement traduits sur l'Hebrew, avec des Explications et Notes Critiques, 10 to., 1788; Bible Interpreters, Ezekiel, by Clarke, and numerous others, are an endless list.) The first two Chapters of Ezekiel are in two Spanish Jesuits, Pradus and Vellalpahamins, in 3 tols, 1746.

EZKIEL [DRAMATIC ART AND LITERATURE].

Ezra, the Book of, is, in a comprehensive view of the Old Testament, the last book of the canon, and, in its place among the Hebrew Scriptures, is considered as the second book of Ezra, and two books of Ezra or Ezdras in the Apocrypha. The first of the two apocryphal books contains the substance of the canonical one, with many circumstan-

tial additions, and in the Greek church it is read as cano-

nal, but in the second, this same tradition is wholly different, and he no church is regarded as a work of in-

spiration, though it is re-cited by several of the ancient fathers. The first six chapters of the canonical book are regarded by some biblical critics as improperly ascribed to Ezra, for it is thought that the events recorded in the first six chapters, that is, the commission from Artaxerxes Longi-

manus, in the seventh year of his reign, to Ezra to go up

to Jerusalem, c. 545, and that which terminates the sixth chapter, namely, the completion of the second temple, that is, the dedication of the temple, and that it was a period of fifty-eight years. The events recorded in the whole ten chapters of the canonical book of Ezra embrace a period of nearly twenty years, that is, from the edict of Cyrus issued in the first year of his reign, b.c. 536, for the return of the captive Jews to Jerusalem, to the termin-
nation of Ezra's government by the mission of Nehemiah to Jerusalem from Artaxerxes Longimanus, in the twelfth year of his reign, b.c. 443. As Daniel's seventy-prophetic weeks commence at the going forth of the edict of Cyrus to Babylon, so that of Artaxerxes to Ezra, these events have been the subject of much critical investigation among biblical critics. The contents of the first six chapters are briefly as follow. Chap. i. gives an account of the proclamation of Cyrus concerning the rebuilding of the temple and the return of the Jews to Jerusalem. Chap. ii. gives an account of the restoration of their property, sacred vessels and utensils; and of presents made by the Chaldians of money and various provisions. Chap. iii. states the numbers of each of the families coming from the multitude which returned to Judea with Zerubbabel, and the number of their beasts of burden. All this account, excepting some of the numbers, is repeated word for word in the seventh chapter of Nehemiah, beginning at ver. 6. In ver. 64 and 65 of Ezra the total numbers and tribes who were to the number of 2,366, which appears not to agree with the preceding particulars, although the addition of these produces only 29,518, that is, a deficiency of 12,542. The numbers given in Nehemiah occasionally differ very widely from those in Ezra: for instance, the children of Azagad are said in Ezra (vii. 12) to have been 2222; but in Nehemiah (vii. 17) they are said to have been 2332, or 1100 more. Nehemiah repeats precisely the total given by Ezra, 42,360; but the addition of Nehemiah's particular numbers makes 31,099, or a deficiency of 11,261, by ignoring it read; makes 245, camels 435, and asses 6,760, exactly agree in the two accounts; but in Ezra, ver. 69, the chief fathers gave to the treasury 61,000 drams of gold; in Nehemiah, ver. 71, they give only 20,090. Chap. iv. iii. records the events of Ezra's journey to Jerusalem, and the commencement of the Jewish sacrificial worship. An account of the interruption of the building of the temple by the decree of Artaxerxes, and its completion by a subsequent decree of the same monarch, with transcripts of the documents, is given in chap. v. and vi. Chapters vii. and viii. contain an account of Ezra's commission from Artaxerxes to undertake the government of Judah, his preparations and reception of presents for his journey thither, with a multitude of Jews, who it appears still remained in Babylon after the return to Judea of the exiles under Zerubbabel; an enumeration of the people and families who returned, and the weight of gold and silver contributed by the king, his counsellors, and the Israelites, for the use of the temple at Jerusalem (viii. 25-35). The important events of Ezra's second journey to Jerusalem, and x. relate the proceedings of Ezra in separating from his wife and children all the Israelites who had married women from among the surrounding nations, and thus were called 'holy seed,' with the abominations of the Gentiles. Ezra (chap. ix. 19) charges his countrymen with having 'strange wives and children' swear, and give their hands, that they would put them away, which accordingly was done. The latter half of the last chapter contains a long list of the persons who were to be subjected to this national renovation. The part from iv. 8 to vili. 27 is written in the Chaldee idiom, the rest in Hebrew. A period to the which the fourth last chapters relate, comprises the Jewish history from b.c. 458 to b.c. 445, is very wonderful concerning Ezra. Chap. viii. of Nehemiah being identical with that of Ezra, the collection of the two affords a mutual illustration. Chapter ix. of Nehemiah relates circumstantially the fact of Ezra's plain reading and exposition of the law to the assembled crowd of people who had gathered to hear him, and the expounding of its meaning, with the expression of the Hebrew words by means of Chaldee interpreters (8); for, since their seventy years' captivity in Babylon, the Chaldee instead of the Hebrew had become vernacular language. (Dean Prideaux's Connection, fol. p. 535.) The perspicuousness and perspicuity of their opinions that the Israelites lost the Hebrew language, and understood only the Chaldee, are well exhibited in Dr. Gill's learned 'Dissertation on the Antiquity of the Hebrew Language,' 8vo. 1767. The two principal under- takings of Ezra, are 1. Restoration of the Jewish books; and 2. The collection and rectification of the Sacred Scriptures. On account of these important services the Jews regarded him as a second Moses. It was commonly believed by the ancient fathers of the Christian church that all the Sacred Scriptures of the Jews were entirely destroyed in the conflagration of the temple and city of Jerusalem by the king of Babylon, and that, on the return of the Jews from the Chaldee captivity, these writings were wholly reconstructed by them from notes and traditions. (See Irenæus, Adversus Haereses, ii. l. c. 25; Tertullian, De Habitu Mulierum, c. iii.; Clemens Alexandrinus, Strom. i.; Basil, in Epist. ad Chilomenon.) The following passages from the second Apocryphal book of Ezra, xiv. 26, 27, appear to be intended as a correction of the former. This says Ezra, 'I will go as thou hast commanded me, and prove the people. The world is set in darkness, and they that dwell therein are without light, for thy law is burnt; and therefore no man knoweth the things that are done; but if I have found before this day by the Holy Ghost into me, and I shall write all things that have been done in the world since the beginning, which were written in the law; And God said, Go, prepare to write swiftly, and when thou hast written, open the book of the law, and the things shall thou show secretly to the wise.' The learned Dr. Prideaux (Connection, p. 260, fol.) remarks, that 'in the time of king Josiah (b.c. 640), through the impiety of the two preceding reigns of Manasseh and Amon (a period of sixty years), the book of the law was so destroyed and lost; that, besides the copy of it which Hilkiah, the high-priest, accidentally found in the Temple (2 Kings xxii. 8, &c.; 2 Chron. xxxiv. 14, &c.), there was then no other to be had; for Hilkiah's surprise in finding it, and Josiah's grief in losing it, and the universal joy at the sight of it, which had ever seen it before; and if this pious king and the high-priest were without it, it cannot be thought that any one else had it.' If this were the authentic copy laid up before the Lord in the Temple, it was burned, as believed by all Jewish and Christian writers, in the conflagration of the temple fifty-two years afterwards, by Nebuchadnezzar. Dr. Prideaux takes it to be implied in several passages which he cites that, from the copy accidentally found by the high-priest Hilkiah, some transcriptions were made previous to the destruction of the Temple and the conflagration, and that the copies Ezra formed his improved edition of the sacred text. In common with most other modern divines, he rejects the opinion of the fathers respecting the restoration of the Scriptures by a new revelation to Ezra, observing (p. 261) that 'it would very much shock the faith of many should it be held that the sacred writings owe their present being to such a revival; it being obvious for sceptical persons to object that he who is said thus to have revived them forged the whole.' All, he continues, that Ezra did was, as he got to Jerusalem and the captivity came to an end as he could, and out of them all he set forth a corrected edition, in which he took care of the following particulars:—1. He corrected all the errors introduced into these copies by the negligence or corruptions of the transcribers; for, comparing the books thus found, the Jews have all their rights. 2. He collected together all the books of which the sacred Scriptures did then consist, disposed them in proper order, and settled the canon of scripture up to that time. The Jewish writers state that the canon was not decided by a council of 120 elders under the presidency of Ezra; but since they mention as members of it, not only the contemporaries of Ezra, as Daniel, Shadrach, Meshach, and Abednego, but the high-priest Simon the Just, who died 250 years before the time of Ezra, it is evident that the number of those who successively arranged and rectified the canonical books. Ezra divided all the books he collected into three parts; the law, that is, the Pentateuch; the prophets, containing all the historical and prophetical books; and the hagiographic, consisting of the books not included in the two other divisions. (Josephus, Ant. Apion.) He divided the Pentateuch into 54 sections, one of which was read every Sabbath; and, according to the Jewish authorities, he was also the author of the smaller Psalter, or second Psalter. The following readings and suggested corrections inserted in the margins of the Hebrew copies. These, called Keri Ceth (that is read and that which is written), appear however in the books attributed to himself. (On the remarks of Prideaux, Buxtorf, Vindiciae Veritatis Hebraicæ, pars. ii. c. 4; Walton's Prolegomeni, viii. § 18; and Dr. Gill's Dissertation on the Hebrew Language.) Most biblical critics state that Ezra changed the ancient names of places for those by which these places were known.
in his time, and some say that he wrote out all the Scriptures in the Chaldee character, which abuse was used and understood by the Jews after the Chaldaean captivity. William Eraz added the vowel-points, and whether they were invented by the Masorite grammarians at a period far posterior to the rise of Christianity, are subjects of great controversy among Hebrew critics. A concise and able view of this dispute is contained in Humbign's 'Hebraizm.' The Jewish commentators assert that all the rules and observances preserved by tradition from the time anterior to the captivity were carefully collected by Ezra, and that having reviewed them, those which he sanctioned by his authority henceforth constituted the oral law, in contrast to distinction to that which is written; the church of Jerusalem, like the church of Rome, regarding Scripture and tradition of equal authority, and believing the latter to be highly necessary for clearing the obscurities, supplying the defects, and solving the difficulties of the former. (See the Rabbinical authorities cited by Dr. Prideaux.) It is a theory suggested by this learned divines, and since adopted by many others, that all the numerous passages of the Hebrew Scriptures which involve chronological inconsistencies were interpolations made by Ezra, and that this is the only possible way to solve the difficulties arising from considering the several books as the productions of the persons to whom they are commonly ascribed. The 'Book of Ezra,' with the two books of Chronicles, Nehemiah, Esther, and Malachi, was supposed by Dr. Prideaux to have been added to the sacred canon by the high-priest Simon the Just, in the year B.C. 150.

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F.

F is a labiodental aspirate bearing the same relation to the other labio-dental aspirate V which the letters called tent, p, t, bear to the medial, b, d, t. It occupies the exact place in the English as in the Latin alphabet, thus corresponding with the digamma of the old Greek alphabet, and the ayn of the Hebrew. In power and form it is likewise closely related to those two letters. [ALPHABET.]

The letter F is interchangeable with the other aspirates c and s, and also with the lip-letters t and A.

1. F in Latin corresponds to h in Spanish, as Latin form, beautiful; Spanish hermosa; Latin femina, female; Spanish femin; Latin furet, fly; Spanish hair. Other examples may readily be found in a Spanish Dictionary at the letter h. The same change prevailed between the Latin of Rome and the Sabine dialect of that language.

2. F in Latin corresponds to th in Greek, as Latin fera, a wild beast; Greek ἄγριος, wild; Latin feb, sleep; Greek θυπ, as seen in ἔφοβος. Indeed this interchange prevailed among the dialects of the Greek language itself in ὑποφοβος and ὑποφοης; ὑπαγος, and ὑπάθος; ἀλεξός and διδακτος. This however seems to depend on the proximity of the letters f and r.

3. F in Latin corresponds to b in German and English, a strong, breed on, to break; frater, brother; bfl, bee, bee, oo.

4. F in English and German to p in Latin, as pell, fall, M (comp. selmgorner); ped, eye, foot; pug-na-re, re, beethoven, b-b-p, p-p-p.

In music, the fourth note, or degree, of the diatonic scale, answering to the fa of the Italians and French. It was originally used as the base clef, to which it gives a base; but while serving as a sign, time has gradually altered its position. F is distinguished from the former, who, under the name of Quintus Fabius Maximus, attacked and defeated the Samnites (429 of Rome) in the absence against the orders of his commanding officer, the Dictator Papirius, who would have brought him to punishment for disobedience, but was prevented by the intercession of the soldiers and the people. This Fabius was five times consul, and dictator twice. He triumphed over the Samnites, Marsi, Gauls, and Tuscans. His son, Quintus Fabius Gorges, was three consul, and was the grandfather of Quintus Fabius Maximus Verus, one of the most celebrated generals of Rome. In his first consulate he triumphed over the Ligurians. After the Thrasymenian defeat he was named Proconsul by the unanimous voice of the people, and was intrusted with the salvation of the Republic. The system which he adopted to check the advance of Hannibal is well known. By his alteration of Quintus's movements, mariolae, and counter-marches, always choosing good defensive positions, he harassed his antagonist, who could never draw him into ground favourable for his attack, while Fabius watched every opportunity of availing himself of any error or negligence on the part of the enemy.

This mode of warfare, which was new to the Romans, acquired for Aquillius the name of Conclutor, or 'temporizer,' and was censured by the young, the rash, and the ignorant; but probably it was the means of saving Rome from ruin. Caesar, who served with Fabius immediately after the war, and, having imprudently engaged Hannibal, was saved from total destruction by the timely assistance of the dictator. In the following year however, 536 of Rome, Fabius, being recalled to Rome, the command of the army was intrusted to the consul T. Varro, who rushed unprepared to battle, when the defeat of Cannae made manifest the wisdom of the dictator's previous caution. Fabius was made consul in the next year, and was again employed in keeping Hannibal in check. In 535 of Rome, being consul for the third time, he re-took Tarentum by stratagem, after which he narrowly escaped being caught himself in a snare by Hannibal near Metapontum. (Livy, xxvii. 15. 16.) When some years after the question was discussed in the senate of sending P. Scipio with an army into Africa, Fabius opposed it, saying that he feared that Hannibal would not come. Fabius died some time after at a very advanced age. His son, called likewise Quintus Fabius Maximus, who had also been consul, died before him. His grandson Quintus Fabius Maximus Servilianus, being proconsul, fought against Viriatus in Spain, and concluded with him an honourable peace. (Livy, Epitome, 54.) He was afterwards consul repeatedly, and also censor. He wrote Annals, which are quoted by Macrobius. (Saturn. i. 16.) His brother by adoption Quintus Fabius Maximus Emilianus, the son of Quintus Fabius (Livy, xiv. 41.), was consul in 630 of Rome, and was the father of Fabius, called Allobroges, who subdued not only the Allobroges, but also the people of Southern Gaul, which he reduced into a Roman province, called from the name 'province of the Gauls ultimus,' or 'Gallia ultima.' Quintus Fabius Maximus, a grandson of Fabius Maximus Servilianus, served in Spain under Julius Caesar, and was made consul in the year 709 of Rome. Two of his sons or nephews, Paulus Fabius Maximus and Quintus Fabius Maximus, were consuls in 713 of Rome. Paulus also a Fabius consul under Tiberius. Panviroius and others have reckoned that during a period of about five centuries, from the time of the first Fabius, who is mentioned as consul, to the reign of Tiberius, 48 consulships, 7 dictatorships, 8 censorship, 7 augures, besides the office of master of the horse and military tribune with consular power, were filled by individuals of the Fabian house. It also could boast of thirteen triumphs and two ovations, (Augustinus de Familia Romanorum.)
FABRIUS PICTOR, the historian, was descended from Marcus Fabius Ambustus, the consul, Caius Fabius, one of the sons of Ambustus, was called Ambustus horne because he was the temple of the goddess of health, which painting existed till the reign of Claudius, when the temple was burnt. (Plut. xxxv. c. 4.) The surname of Pontius was continued to his children, one of whom, Caius Fabius Pontius, was consil. with Quintus Fabius, and the father of the historian. Quintus Fabius Pontius, the historian, lived in the time of the second Punic war, according to the testimony of Livy (xxi), who says, in speaking of the battle of the Trasincum lake, that he followed in his narrative the authority of Fabius Pontius, who seems connected with that memorable event. Fabius appears, from the testimony of Dionysius and Cicerone, to have written both in Greek and in Latin. Of the extracts from or references to his 'Annals,' which have been transmitted to us, some consisted of the virtues of Italy, the beginning of Rome, the subsequent fasts, or history of the Romans. He was the first who compiled a history of his country from the records of the pontiffs, and from popular tradition. He is spoken of with praise by Livy, who evidently borrowed largely from him, and by Cato, Pliny, Appian, and others. Polybius however confines his obvious partiality for the Romans, and his unfairness towards the Carthaginians, in his account of the second Punic war. His Annals are lost, with the exception of some fragments, which have been preserved by the sub-order, and are jointed in the collections of Antonius Augustinus, Antwerp, 1595, Antonius Ricobonius, Venice, 1563, and others. The well-known impositor, Anno da Viterbo, published a small work on the origin of Rome, under the name of Fabius Pontus, but which, on examination, was found to have been sent by the senate to Dophli after the battle of Cannae, to consult the Oracle about the ultimate result of the war. He must not be confounded with Servius Fabius Pontus, who lived in the time of Catu the Elicier, and who is praised by Cnndr for his knowledge of jurisprudence, literature, and antiquity. (Vossi, De Historica Latini; Fabricius, Bibliotheca Latina.)

FABLE. Fabula in Latin, in its general sense means a fictitious narrative, but it also means more particularly a specific instance of a common story of a truthful tale inculcating a moral truth or precept. As such it is divided into two sorts, the parable and the apologue. The former narrates some incident, which, although it may not have happened exactly as the narrator supposes, yet could have happened at any time, there being nothing impossible or improbable in it. Of this description are many of the parables contained in the Scriptures, and especially in the New Testament, it being a favourite mode with our Saviour of illustrating his precepts by similitudes. When, for instance, he told the parable of the Prodigal Son, on a long journey, intrusted certain talents or sums of money to each of three servants, he did not mean that such a fact had occurred at any particular time, though it might have occurred, but he chose this figure as presenting the way in which God intrusts to his servants talents, when he has gifted men with, and which he expects them to cultivate and render useful in proportion to their capacities. The second species of moral fable, called apologue, relates facts which are evidently untrue, and cannot have happened; such as animals, or even inanimate things, speaking, but which serve as comparisons for the actions of men. Such was the well-known apologue of Memnon Agrippa, addressed to the plebs of Rome, who had revolted against their regents; in which he pointed out the limits of the human body having once revolted against the belly. (Livy, i. 32.) Most of the fables which are called Aesopian are apologues, although some are of the parable kind; for example, that of Aesop and the villain who threw a snail into the river. The apologue is one of the oldest forms of composition, being well calculated to strike the minds of men in a rude state. Homer's War of the Mice and the Frogs is a composition of the nature of the apologue; only being extended to a considerable length, and including a succession of incidents, it is classed among the heroricomic poems, whilst the apologue, or fable properly so called, points out only one particular incident from which it draws a moral. In the same manner, in modern times, the 'Animal Parlants,' or 'Court and Parliament of Beasts' of Casti must be classed among the necropic poems, although it may be said to consist of a series of apologies, each pointing to some particular error, or abuse, in the state of society. It is evident that the older and simpler mythological fables of the gods and heroes among the ancients were originally intended by the early patriarchs or priests to illustrate by allegory the attributes of the Creator, the phenomena of nature, and the progress of society, as is shown by the great loss of sight of the moral, and believed the fiction in its literal sense.

The oldest collection of fables in any European language is in Greek prose: the fables are attributed to Aesop, but much doubt exists as to the real author or authors of them. Among the many versions of Aesopian fables, only a few of which have come down to us. [Burriss.] The fables called the fables of Bidpai (Biblis) are derived from a collection in the Sanscrit language, and Lokman is said to have written fables in Arabic; but several of the Aesopian fables were preserved, as some of those attributed to Aesop, and it has been supposed that Lokman and Aesop were one and the same personage. [Lokman.] Among the Latin fables, Phaedrus, who lived under Tiberius, is the most celebrated; he professes to have collected subjects from Aesop. The MS. of Phaedrus was not discovered before the end of the sixteenth century. Avianus, or Avius, who (supposing the two names to mean the same individual) lived under the elder Theodosius, wrote a collection of fables, which are obtained from various sources; he wrote a dissertation on the origin of Aries and Aesopus. Paerno of Cremona, who lived about the middle of the sixteenth century, made a collection of Aesopian fables, which he turned into Latin verse, and which were published at the expense of his friend, the Duke of Milan, in 1542. In the same year, the same author made another collection, and as having found a MS. of Phaedrus in some library, and borrowed his subjects from it. In the modern languages, among the original writers of fables or apologues, La Fontaine has been generally celebrated. Among the English, Gay and Moore have written fables. The Germans have had Lessing, Gellert, and others; and the Spaniards have yarte and Samuel. The Jesuites also, in the sixteenth and seventeenth centuries, wrote chiefly translations or paraphrases from the Greek and Latin fabulists. In the eighteenth century Pignotti, a native of Tuscany, wrote original fables in verse, which were published at Pisa in 1742; and have been often reprinted since. Bertold also wrote fables (Pavia, 1788), with an essay on fables. Luigi Fiocchi published, under the name of Chisso, a collection of fables (Florence, 1807).

FABRETTI, RAFAELE, born at Urbino in 1610, was secretary to Pope Alexander VII and for a long time a pensionary of the Holy See. He left a number of important collections, found in the public archives in the castle St. Angelo under Innocent XII. Fabretti spent most of his time in searching the ruins which are scattered about Rome and its neighbourhood, and digging for those which were under ground. He lived partly in Rome, and partly in the more remote parts of Italy, and besides being a learned antiquary, and a sober critic in his manner of taking notes and selecting antiquities, which he gathered in a collection at his house at Urbino, which collection has been since transferred to the public palace of the same town. It is related that the horse upon which he rode for many years in his perambulations through the Campagna, and upon which his friends had nicknamed Marco Polo, became so accustomed to his master's hunting after the usual fashion, that it could not bear to be separated from him, even when he met with any. Fabretti wrote, 1°, Inscriptionum Aquitaniae Expl., ed., 1699: 2°, De Columna Traiana, ed., 1683, an elaborate work, in which he illustrated with much attention and judgment the sculptures of that important monument. He also published a History of the line table which is in the Capitoline Museum. 3°, De Aquis et Aquilaeubus Veteris Rome, 1680, reprinted with notes and additions in 1788. Fabretti rendered great services to archeology by his system of illustrating one monument by the help of another. He had a correspondence with James Gronovius about the interpretation of some passages of classical writers, in which both resorted toscribleable securitis. Fabretti died at Rome in January, 1788, at the age of eighty. He may be considered as the predecessor of Bianchini, Boturini, and other archaeologists who illustrate the antiquities of Rome during the eighteenth century.
FABRIUS, JOANN CHRIST, was born in the year 1742, at Kiel, in the duchy of Schwartau. He was brought up to the medical profession, and at the age of twenty-three was made professor of natural history and rural economy at Kiel.

Fabrius studied under Limnaeus, and afterwards + occupied perhaps the collegial situation of which the pupil of that great naturalist. Having been filled with emulation by the circumstance of Limnaeus quoting him in his Systema Natum, he resolved to make an especial study of entomology, a science at that time in its infancy. The first results of his investigations were shortly before (1773) made known in his Systema Entomologiae, where he proposed a new arrangement of the insect tribe, the novelty of which consisted in choosing for his divisions the modifications observable in the parts of the mouth. The tribe Odontopini was divided into the metamorphoses of the various tribes, the other upon their organs of motion. The latter was first pointed out by Aristotle, and was that adopted by Limnaeus.

Fabrius subsequently published numerous other works of still greater importance, a list of which is given at the end of this article. Possessing a great knowledge of languages, Fabrius travelled through the northern and middle states of Europe, collecting new materials, and frequenting the various museums, from which he described all such insects as had hitherto been unpublished. Accounts of his travels in Norway, Russia, and England, were published by him. He visited England seven times, and received great assistance from inspecting the collections of Sir Joseph Banks*, John Hunter, Drury, Franchon, and others.

From being jealous of those naturalists who, in his day, enjoyed reputation in the same branches which he more particularly attended to, Fabrius, upon seeing the beautiful work of Waleenacer on spiders, expressed great dissatisfaction, and recommended his pupil to convey to that author all the specimens which he possessed of the spider tribe. Fabrius was of an amiable disposition; and is said to have been reproached by a fellow professor for his extreme modesty, and to have replied in the words: Although so well versed in entomology, Fabrius was not a stranger to other branches of zoology; he was also versed in botany and mineralogy. He died of dropsy, in his sixty-fifth year, *Numerous insects in the collection of Sir Joseph Banks (which is now the property of the Linnaean Society) still have names attached to them in the handwriting of Fabrius.

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much regretted by all naturalists. His principal works are as follows:


FABRIZIO, GERONIMO, commonly called FABR- CIUS AB AQUAPENDENTE, was born in 1537 at Acqua Pendente, a city near Orvieto, in the States of the Church. His parents, although poor, contrived to furnish him with the means of obtaining an excellent education at Padua, which was then rapidly approaching the eminence it long held, especially as a school of medicine, anatomy, and surgery. He afterwards became a professor of Anatomy and Surgery in the University of Florence; but, in 1564, was appointed a member of the Venetian government to encourage the study of the medical sciences. Vesalius and Fallopius had been successively invited to fill the chair of anatomy and surgery, then conjoined, and afterwards distinguished as separate branches of medical discipline; and Fabricius himself, who did much to extend the reputation of the school formed by these leaders in the restoration of anatomy, was afterwards still more manifestly rewarded, though equal to, if not in merit or posthumous fame. He became a member of the Faculty of Physicians and Surgeons at Venice, and this honour, which is said to have brought him a fortune of two hundred crowns, and which clothes with an air of exclusiveness privileges and titles of honor. The fame and wealth he derived from his practice a surgeon was even more equal than that to which he enjoyed as an anatomist; and after upwards of fifty years of uninterrupted and well-deserved prosperity, he retired from public life the possessor of an enormous fortune and the object of universal esteem. Yet he does not appear to have found the contentment he sought in his retirement. His latter years were embittered by domestic disquietudes and the unfailing conduct of those who expected the last of his heirs; and he died in 1619, at the age of eighty-two, not without the suspicion of poison, at his country-seat on the banks of the Brenta, still known as the Montagnola d'Aquapendente.

The name of Fabricius is embossed to the cultivators of his country. He is indebted for it to the reputation of William Harvey, whose discovery of the circulation of the blood (by far the most important yet achieved in physiology) was suggested, according to his own statement, by the remarks of Fabricius on the vascular structure of the bat. All the knowledge of Fabricius on this subject has been disputed, though strongly asserted by some anatomists. The truth is, that his merit did not so much consist in original discovery as in the systematic arrangement and dissemination of the knowledge acquired by his predecessors. We have mentioned that he had more contemporary reputation as a practical surgeon than as an anatomist; and it is as a surgeon that he is still chiefly remembered. He was enabled, by the unceasing care and anxiety, which was, however, been since wrought up in the general body of surgical knowledge, are now seldom consulted or quoted specifically as derived from himself. He published many tracts on both departments. Those of anatomy are filled with the history of discovery, and have been invested with unimixed praise, by Harvey and the writers of the period immediately subsequent to his own, who were collected in one volume folio, and republished, with a biographical memoir of the author, by Albinus at Leyden in 1728. The best edition of his surgical works, the twelfth, was printed also in one volume folio, at Padua in 1600. His writings are all in Latin, and display a considerable knowledge of the literature, general and medical, of that language and of the Greek.

FABYAN, ROBERT, the historian, was descended of a respectable family of Essex. Bishop Tanner says he was born in London. We have no dates of his early life, but he is known to have belonged, as a citizen, to the Company of Drapers. From records in the city archives, it appears that he was alderman of the ward of Petticoat Without, and in 1493 served the office of sheriff. In 1496, in the majority of Sir Henry Colet, we find him "assigned and chosen," with Mr. Recorder and certain commoners, to ride to the king for redress of the new impositions raised and imposed by the commissioners (which it is supposed, that is, the Low Countries) an exaction which was desisted from in the following year. In 1502, on the plea of poverty, he resigned the alderman's gown, not willing to take the mayoralty, and probably retired to the mansion in Essex, mentioned in the earlier years of his life, at Thetford Gernon. That he was eminent at this period cannot be doubted, but he seems to have consulted that the expenses of the chief magistracy, even at that time, were too great to be sustained by a man who had a numerous family. He ordered the figures, as may be seen in his will, of sixteen children, in brass, to be placed upon his monu- ment in the church of St. Michael Cornhill. In the second part (p. 198), gives the English part of the epitaph on Fabyan's tomb, from the church of St. Michael Cornhill, and says he died in 1511, adding that his monument was gone. Bale, who places Fabyan's death on February 28th, 1512, is probably nearest to the truth, the will, though dated July 11th, 1511, was not proved till July 12th, 1513. Fabyan's will, printed with the last edition of his 'Chronicle,' affords a curious comment on the manners of the time of Henry VIII.

The history been printed five editions of Fabyan's 'Chronicle.' The first was printed by Pyson in 1516, and is of great rarity, in a perfect state. Bale says that Wolsey ordered many copies of it ('exemplaria nonnulla') to be burnt. The second was printed by Rastell in 1522. The last and most important edition is that of Reynolds. The changes of religion gave rise to many alterations and omissions in the third and fourth editions; but all the editions, as well as a manuscript of the second part of the book, were collated by Sir R. Ellis for the fifth edition, 4to, London, 1807, to which the present account of the historian has been principally taken. Fabyan, whose object it was to reconcile the discordant testimonies of historians, named his book 'The Concordance of Histories,' adding the fruits of personal observation in the course of his Chronicle of London, a regular title; the latest is called 'The New Chronicles of England and France, in two parts, by Robert Fabyan, named by himself the Concordance of Histories.' The first edition, which may be considered as Fabyan's genuine work, extends from the time when "the Britons first rose the Isle of Albion," to 1485; the second continued the history to 1509; the third to 1541; and the fourth to the month of May, 1559. The names of the several authors who were at different periods are unknown.

FACADE, a French term of modern introduction into the English language. It expresses the face, or front view of an edifice, and is often used in speaking of architectural buildings, as the facade of the Louvre, or the facade of St. Peter's at Rome. Facade was applied originally to denote the principal front of a building: the term Facciata, used by the Italians, is, for the most part, applied to such fronts as have a principal entrance.

FACCIOLATI, JACOPO, was born at Toriglia on the
Euganean hills, in the province of Padua, in 1692. He studied first in the college of Este, and was afterwards placed by Cardinal Barharigo, bishop of Padua, in the clerical seminary of that city, where he completed his studies and was entitled to a general licence to teach and afterwards prefect or chief superior of the same establishment. The seminary of Padua had and still has a high reputation as a place for the study of Latin and for the numerous and generally accurate editions of the classics and other school books which have come from its press. Facciolati contributed to support this reputation by his labours. Among other works, he published improved editions of the Lexicon of Schrevelius, of the Thesaurus Ciceroianus of Nizolius, and of the vocabulary of seven languages known by the name of 'Calepino,' 3 vols. fol., Padua, 1731. In this last undertaking he was greatly assisted by his pupil, Egidio Forellini, although he was not willing to acknowledge the obligation. The work however being still incomplete, J. B. Gallizioli made a new edition of the 'Calepino,' 2 vols. fol., Venice, 1778, and added many oriental and other words. It was in the course of his joint labours with Facciolati that Forellini conceived the plan of a totally new Latin Dictionary, which, after more than 30 years arduous application, he brought to light in 1731. The 'Lexicon' has many ordinary publishers, and in 1771, Padua, 1771. This work has superseded all other Latin Dictionaries. Forellini, more generous than Facciolati, acknowledged in the title-page of his work that its production was in great measure due to the advice and instruction of his father. He is perhaps of opinion that the pupils of the seminary of Padua, he tells them with a touching simplicity that when he undertook his work he was in the prime of youth, but that in the course of its completion he had grown old and infirm as they then beheld him (Bailment, 93). His copy has been preserved in the library of the seminary. A new edition of Forellini's Lexicon has been lately published by the Alato Forlanieto of the same institution.

In 1732, Facciolati being appointed professor of logic in the University, he explained a series of introductory Latin discourses to the students of his class, which were received with considerable applause. In 1739 he began to write in Latin the 'Fasti of the University of Padua,' the introductory part, in which he describes the origin, the laws and regulations, and the object of that celebrated institution, is very well written, but the Fasti themselves contain little more than dry lists of the successive professors with few and unimportant remarks. His Latin epistles, as well as his Orations or discourses, have been admired for the purity of their style and brevity, to which much praised by competent judges, such as Roberti and others of his countrymen, as well as by Brucker, the historian of philosophy, and other learned foreigners. The king of Portugal sent him a flattering invitation to Lisbon to take up his residence in that wonderful kingdom, but Facciolati declined the offer on account of his advanced age. He however wrote instructions for the reorganization of the scholastic establishments of that country, which had become necessary after the expiration of the Jesuits. Facciolati died at Padua in 1788, at the age of 88. He left numerous works, mostly in Latin, besides those already mentioned; among others, some allegorical and satirical discourses on the occasion of a funeral oration which he had written for the late Doge Pisani, being suppressed by the Papal government.

FACLIA. [Civil Architecture; Column.]

FACTOR, a name given to any algebraic expression considered as part of a product. Thus, a and a + z are factors of the product a(–a + z), or a + a + a + a. The term factoriell expression has been in some instances applied to an expression of which the factors are in arithmetical progression; such as

\[(a+1)(a+2)(a+3)(a+4)\]

See Harschel, Examples of the Calculus of Finite Differences.

FACTOR is a mercantile agent, who buys and sells the goods of others, and transacts their ordinary business on commission. He is entrusted with the possession, management, and disposal of the goods, and buys and sells in his own name, in which particulars consists the main difference between factors and brokers.

The chief part of the foreign trade of every country is carried on through the medium of factors, who generally reside in a foreign country, or in a mercantile town at a distance from the merchants or manufacturers who employ them; and they differ from mere agents in being entrusted with the complete control of the money passing through their hands. The common duty of a factor is to receive consignments of goods and make sales and remittances either in money, hills, or purchased goods in return; and he is paid by means of a per-centage or commission upon the money passing through his hands. It is usual for a factor to make advances upon the goods consigned to him, for which, and also for his commission, he has a general lien upon all the property of his employer which may at any time be in his hands.

It is the duty of a factor to keep the goods with which he is entrusted free from injury, to keep a clear account of his dealings in the affairs of his employer, and at proper times to transmit it to him, together with information of all the transactions and liabilities which he has entered into and incurred in the course of his employment, and by which his principal can be affected; also to send him advice of all bills accepted or drawn upon his credit, and generally to act with fidelity to him, strictly observing the letter or the spirit of his instructions, and where they are silent, following the usages and custom of other merchants in like cases, as to time and mode of sale, credit, &c.

A factor is not answerable against all events for the safety of the goods in his care; it is sufficient if he does all that a man of average prudence would do in the care of his own property. He is in certain cases, however, responsible for any other accidental damage happening without his default. He is bound, upon receiving notice from his principal, to insure the goods consigned to him (provided he has effects of his principal in his hands of sufficient amount to defray the premium), and to execute the proper inclusion or re-insurance, or exportation or importation of the goods, or to cause the regular and necessary entries to be made at the custom-house, and do all other things necessary for the safety and preservation of the goods. His liability in this respect is expressed in the act of 3 Henry VII, &c. 171, 172, 173, &c. 174. The word 'Bailment' is derived from the Roman word 'Bailmentum'; and see BAILMENTS, fifth division, 'Locatum,' second subdivision.

Where general and unlimited orders are given to a factor, he is left to buy and sell on the best conditions he can; and if detriment arise to the property, it is not to be imputed to him unless he can show that the factor acted fraudulently or with gross negligence.

In accordance with the general rule that a principal can only be bound by the acts of his agent while acting within the scope of his power, the passing of the recent stat. &c. 174, &c 244, to that a factor had only authority to sell the goods of his principal, and that if he pledged them, the principal might recover them from the pledgee. This was productive of considerable inconvenience, for, with this consideration, the law of every other country except England and America, the pledge might retain the goods as security for his advances to the factor, it was urged, and with great reason, that, as between the principal and the pledgee of the factor, the principal ought to be the loser. It was who pined confidence in the factor, and who enabled him to appear the actual owner of the goods: he might have controlled the authority and limited the operations of his factor; but the pledgee knew nothing of his employment; he saw only the factor in the possession of the goods, and advanced his money on what appeared a sufficient security for repayment. In accordance with views like these, that statute was passed, and now the pledgee of a factor, when he lends his money without notice that the actual owner of the goods, is enabled to retain them for his security; and even when he has such notice, the lender has a lien upon the goods to the same amount as the factor was entitled to.

A sale by a factor creates a contract between the principal and the buyer, and the principal may maintain an action against the buyer for the price, and may by notice direct him not to pay the money to the factor, which notice the buyer is bound to attend to. So a purchase by a factor for his principal, without the latter's money, but a payment to the factor is a sufficient discharge, unless notice to the contrary has been given by the principal. And this holds good in both cases, even when the
name of the principal is not disclosed at the time of the contract, but is afterwards discovered; though, where a factor conceals the name of his principal and buys or sells apparently on his own account, the buyer or seller may treat the factor as the principal so far as any other liability of the latter is concerned; as a factor regarded in his own name, being indebted to the purchaser, the latter may set off the amount of debt due to him from the factor against the price of the goods.

There is another description of factors, who acts under what is called a del credere commission, where, for an additional per-centage he engages for the solvency of the purchasers of the goods consigned to him. This contract, it is evident, arises on the supposition that the factor being residing among the purchasers, must be better able to judge of the solvency of the principal in a particular country. For a long time it was considered that under this arrangement those who dealt with the factor were liable to him alone, and that he was liable, in the first instance, to his employer; it has, however, been decided that the factor stands in the relation of a surety for the persons with whom he deals on account of the employer, and that he is liable to his employer only in case of their default. Del credere is an Italian mercantile phrase, of the same signification as the English word guarantee, and the Scotch warrandice.

Various persons deemed to be answerable for one another for the whole, and by the law of merchants, as factors, are oftentimes dispensed, one may account without his companion.

The principal may recover against his factor for action by the factor or his representative, on the ground of his instructions, if loss occur thereby, as if he pur chased goods at a limited price, and fraudulently sells them again for his own profit. If a factor, without the orders of his principal, exports goods prohibited by the Customs, and the same are seized, they are answerable for the highest value, and if the direction of his employer, or sells his goods at an undervalue, or exports goods of an improper quality, he is answerable for the damage. And if a factor exports goods of a different quality or kind from those he was directed to send, he is answerable for the difference of quality or kind to which his order referred; to which he was ordered to send them, the merchant may refuse to accept them, and may recover any damage he has sustained, in consequence of his neglect, from the factor. The rights and liabilities of merchants and factors are governed by the laws of the place in which they are domiciled, and any contract which may be made by either of them must be governed by the law of the place where it is made, and these rules are often thereby the courts of justice of every country. Since the passage of the abovementioned statute, a foreign merchant cannot recover his goods from the pledge of his factor in England, though he may be totally ignorant of the change which has taken place in the law. And again, if a bill be accepted in Leghorn by an English factor, for a purchaser fails, and the sufficient effects of the drawer in his hands at the time of acceptance, the acceptance becomes void by the law of Leghorn, and the acceptor is discharged from all liability, though by the law of England he would be bound. (See 2 Strange's Reports, 733; Benoî's Le Mercredi; Bell's Commercial Diet.)

FACTORY. FACTORY SYSTEM. The name of factory was formerly given only to establishments of merchants dealing in foreign merchandise, governed by certain regulations adopted for their mutual support and assistance against the undue encroachments and interference of the governments of the countries in which they resided. In modern times these factories have, in a great degree, been converted into factories for the production of cotton merchandise, most commonly with the assistance of machinery. The factory-system of England owes its origin to the invention and skill of Arkwright. It is true the name of factory is now extended to cover a vast number of establishments, for the operations of which those inventions are inapplicable, but it is probable that but for the invention of spinning machinery, and the consequent necessary aggregation of large numbers of workmen in cotton-mills, the name would never have been thus applied. It is in these cotton-mills that the factory system has been brought to its highest state of perfection, and it cannot therefore be necessary to extend this description to the operations of any other branch of manufacture.

The first cotton-factory was established by Arkwright in connection with Messrs. Need and Strutt, of Derby, and was situated at Crompton, on the river Derwent. It was built in 1771, and continues still in operation, with the original spinning-frames of the great inventor. It is not the least among the merits of that extraordinary man, that being the first to employ the combined labour of numerous workmen for the production of that which had previously resulted from individual employment, he was able to accord to those engaged in the manufacture of cotton, a great regard to order, economy, and simplicity of action, that with but few and unimportant modifications, his plans are continued to the present day. [Arkwright]

The operations of Arkwright and his partners were for many years met with opposition from the part of the manufacturers, who foresaw that the success of the new machinery would speedily destroy the value of the hand-spinning implements which they employed. Their combinations were of no advantage to those engaged in this manufacture. The manufacturers, they had no difficulty in producing the belief that the new machines would soon entirely supersede manual labour, and the consequence of this delusion was a general crusade against the workmen against all spinning-machinery set in motion by power. The Labour Act of the Scotch parliament in 1774 to prevent the employment of women and men under the age of 21 in those cotton-mills in England and Wales, containing nearly two millions of spindles, and estimated to produce as much yarn as could have been spun by a million of persons using the old domestic wheel.

That early spirit of opposition on the part of the manufacturers continued till the present session states the number of factories which, in the month of February, 1837, were under the regulations imposed by the 'Factory Act.' From this return it appears that the establishments at that time subject to the visits of the inspectors amounted to 4,106, showing an increase of 1,000 factories upon the number which existed in 1833. The great increase may be owing in part to the circumstances of some establishments existing in 1833 having since been brought under the regulations. The return does not appear to include the numbers of establishments where cotton is manufactured but not in large factories. (See 2 Strange's Reports, 733; Benoî's Le Mercredi; Bell's Commercial Diet.)

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## Numbers and Ages of Persons Employed

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<tr>
<th>DIVISIONS OF THE KINGDOM</th>
<th>Number of Factories</th>
<th>Between 8 and 12 years</th>
<th>Between 13 and 18 years</th>
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<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>England</td>
<td>1,076</td>
<td>497</td>
<td>1,562</td>
<td>1,044</td>
<td>436</td>
<td>1,480</td>
</tr>
<tr>
<td>Scotland</td>
<td>1,094</td>
<td>475</td>
<td>1,569</td>
<td>1,046</td>
<td>438</td>
<td>1,484</td>
</tr>
<tr>
<td>Wales</td>
<td>1,089</td>
<td>477</td>
<td>1,566</td>
<td>1,044</td>
<td>436</td>
<td>1,480</td>
</tr>
<tr>
<td>Total Cotton Factories</td>
<td>3,261</td>
<td>1,381</td>
<td>4,642</td>
<td>3,235</td>
<td>1,382</td>
<td>4,617</td>
</tr>
<tr>
<td>England</td>
<td>235</td>
<td>92</td>
<td>327</td>
<td>229</td>
<td>89</td>
<td>318</td>
</tr>
<tr>
<td>Scotland</td>
<td>236</td>
<td>94</td>
<td>330</td>
<td>232</td>
<td>97</td>
<td>329</td>
</tr>
<tr>
<td>Total Woollen Factories</td>
<td>471</td>
<td>186</td>
<td>657</td>
<td>361</td>
<td>142</td>
<td>497</td>
</tr>
<tr>
<td>Westmoreland</td>
<td>921</td>
<td>66</td>
<td>987</td>
<td>660</td>
<td>36</td>
<td>696</td>
</tr>
<tr>
<td>England</td>
<td>235</td>
<td>92</td>
<td>327</td>
<td>229</td>
<td>89</td>
<td>318</td>
</tr>
<tr>
<td>Scotland</td>
<td>236</td>
<td>94</td>
<td>330</td>
<td>232</td>
<td>97</td>
<td>329</td>
</tr>
<tr>
<td>Total Silk Factories</td>
<td>471</td>
<td>186</td>
<td>657</td>
<td>361</td>
<td>142</td>
<td>497</td>
</tr>
<tr>
<td>England</td>
<td>150</td>
<td>69</td>
<td>219</td>
<td>135</td>
<td>56</td>
<td>191</td>
</tr>
<tr>
<td>Wales</td>
<td>151</td>
<td>69</td>
<td>220</td>
<td>135</td>
<td>56</td>
<td>191</td>
</tr>
<tr>
<td>Total Flax Factories</td>
<td>301</td>
<td>138</td>
<td>439</td>
<td>270</td>
<td>115</td>
<td>385</td>
</tr>
<tr>
<td>England</td>
<td>59</td>
<td>19</td>
<td>78</td>
<td>49</td>
<td>11</td>
<td>60</td>
</tr>
<tr>
<td>Scotland</td>
<td>52</td>
<td>22</td>
<td>74</td>
<td>47</td>
<td>13</td>
<td>60</td>
</tr>
<tr>
<td>Total the four branches of manufacture</td>
<td>3,150</td>
<td>1,155</td>
<td>4,305</td>
<td>2,602</td>
<td>941</td>
<td>3,543</td>
</tr>
</tbody>
</table>

It will be seen from the foregoing table, that a very large proportion of the hands employed in factories consist of children and young persons. The large sums invested in machinery make it a main object with all manufacturers to have the owners to keep their works in motion as constantly as possible, and, unless prevented by legislative interference, there is too much reason to believe that children may be tasked beyond their strength, to the permanent injury of their constitutions. This abuse was the more to be apprehended, because a large proportion of the children engaged in cotton-spinning are not directly employed by the masters, but are under the control of the spinners, a highly-paid class of workmen, whose earnings depend greatly upon the length of time during which they can keep their young assisting at work. Although the recitals of cruelties alleged to exist were shown upon examination to have been very greatly exaggerated, it cannot be denied that enough of misery was proceed under it imperative upon the legislature to intercede. A parliamentary committee was set for the investigation of this subject in 1832, and subsequently a commission was issued by the crown for ascertaining, by examinations at the factories themselves, the kind and degree of abuses that prevailed, and for suggesting the proper remedies. In consequence of these inquiries an act was passed in 1833, (2 and 3 Wm. IV., c. 103,) the provisions of which, it is generally believed, have affected all the good which it is in the power of the legislature to do, consistently with the protection of the branches of industry to which the provisions of the act apply: the principal of those provisions are as follows:

After the 1st January, 1834, no person under the age of 18 years is allowed to work in any cotton, woollen, flax, or silk factory working by the aid of steam or water-power, between the hours of half past eight in the evening and half past five in the morning.

No person under 18 years of age is allowed to work more than 12 hours in any one day, nor more than 69 hours in the week. Factories worked by the aid of steam or water-power, time lost through the deficiency of water may be made up at the rate of three hours additional labour in the week. In factories where the steam-engine is employed, lost time occurring through any accident happening to the machinery may be made up at the rate of one hour and a half to be allowed in each day for meals.

Except in silk-mills, no children under nine years of age are allowed to be employed.

Children under 11 years old are not to be worked more than nine hours in any one day, nor more than 48 hours in one week. This clause came into operation six months after the passing of the act. At the expiration of 12 months its restriction was applied to children under 12 years old, and when 30 months from the passing of the act had elapsed the restriction was applied to all children under 13 years old. As the act was passed on the 20th August, 1832, this clause came fully into operation on the 1st of March, 1836. In silk-mills, children under 13 years of age are allowed to work 10 hours per day. The children whose hours of work are regulated by the act are entitled as both days, Christmas-day and Good-Friday, and besides to eight half days in the year. It is made illegal for any mill-owner to have in his employ any child who has not completed 11 years of age without a certificate by a surgeon or physician, ' that such child is of the suitable strength and appearance of children of ordinary age under 11 years.' In 18 months from the passing of the act this provision was made to apply to all children under 12 years of age, and upon the first March, 1836, the provision was made to include all children under the age of 13. Four persons were appointed under the act to be Inspectors of Factories, in order to carry into effect the various provisions which it contains, with power to make such rules and orders for the purpose as they should see necessary; and in order to assist the inspectors in the performance of their duties, an adequate number of super-intendents were appointed to act under their directions.

After the expiration of six months from the passing of the act, it was declared unlawful to employ in any factory any child under the ages restricted to forty-eight hours' labour in the week, unless on every Monday the employer should receive a ticket from some schoolmaster, certifying that such child has for two hours at least for six out of seven days of the week next preceding attended his school. The school to be chosen by the parents or guardians of the child; but in case of their omitting to apply at any school, or in case of the child being without parent or guardian, the inspector may appoint some school in which the child may be taught, and the employer may be allowed to deduct from its weekly earnings any sum not exceeding one penny in every shilling, to pay for the schooling of such child.

The full and perfect carrying out of the intention of the legislature in passing this act is provided for as far as possible by various penalties, which it is not necessary further
to particularise. One half of the penalties are, as is usual, awarded to the informers, and the remainder is to be applied towards the support of schools in which children employed in factories are educated.

The guilty discharge of their duties on the part of the inspectors is provided for, by requiring them twice in every year, and oftener, if called upon, to deliver in a report to the secretary of state, detailing the condition of the factories, and of the children employed therein.

FAECULA. [STARCK.]

FAENZA (formerly Faentia), a town and bishop's see of the papal state north of the Apenines, in the delegazione or province of Ravenna. It is situated in a well-cultivated plain watered by the river Lamone, which rises in the Apenines of Tuscany and runs to the Adriatic. A navigable or navigable canal communicates between Faenza and the Po di Primaro, or southernmost branch of the Po. Faenza is a well-built, modern-looking town, with about 15,000 inhabitants. The streets are regular; there is a fine market-place surrounded by arcades, many palaces, churches rich in paintings, convents, a fine bridge on the Lamone, a theatre, and a Lyceum. There are several manufactories of a kind of coloured and glazed earthenware, which is called Majolica in Italy, and Faience in France, where it was introduced from Faenza, and which, before the manufacture of china or porcelain became established in Europe, was in greater repute than it is at present. There are also manufactories for spinning and weaving silk, and some paper-mills. Faenza was always a town of the Boi, and afterwards a municipium under the Romans. It was near Faentia that Sulla defeated the consuls Carbo and drove him out of Italy. (Liv. Epitome, 88.) It was afterwards ruined by the Goths, was restored under the Exarch, but its importance was not increased by its elevation. It was for some time subject to the Bolognese, but was afterwards ruled by the house of Manfredi to the end of the fifteenth century. Galeotto Manfredi being murdered by his wife, left two infant sons, Astorre and Evangelista, the elder of whom, Astorre, having some years previously been proclaimed by the inhabitants lord of Faenza, but a few years after, Cassero Borgia, as captain-general of his father, Pope Alexander VI., besieged the town, and the inhabitants surrendered on condition that Astorre and his brother should be free. He however sent them prisoners to Rome, where they were cruelly put to death in the Castel Sant' Angelo, and their bodies thrown into the Tiber, in the year 1501. This was one of the most atrocious transactions in the life of Borgia. Since that time Faenza has been annexed to the papal state. It is 100 miles southeast of Bologna, 40 north-west of Rimini, and 20 southwest of Ravenna. In the Roman times, a road led from Faenza to the south, which ascending the valley of the Anemo, now Lamone, and crossing the ridge of the Apen- nines, by the Apennine pass, leads to the coast of Tuscany, and joins the naviglio of Tuscany at Bolognese. A new carriage-road in a parallel direction, but more to the eastward, has been completed by the present grand-duke of Tuscany: it leads from Desarno, in the valley of the Sieve, north of Florence, the Apenines of San Benedetto, 5000 feet above the sea, and then following the course of the river Montone, joins the Via Armilia near Forli.

FAGUS, the beech, is a genus of Corylaceous exogens, having triangular nuts enclosed within a spiny capsule or husk. There are six species, some of which are mere bushes: the only one known in Europe of any importance is the Fagus sylvestris, or common beech, a native of various parts of the world in temperate climates. In Europe it is found as far north as 60° in Norway: it is met with in Palestina and Armenia, all over the south of Europe, and in the United States of America. It is one of the most handsome of our trees on dry sandy or chalky situations; its meat or nuts not only furnish food for swine, but yield by pressure after pounding a useful oil; and its timber, although light, is durable, of great durability whatever locality where it is found, and durability, if properly seasoned, is very extensive used for a variety of purposes, particularly for boat-building, work under water, carving and chair-making: it is also one of the best kinds of woods for handiwork, and the varnish is propagated by the nurserymen, the purple, and the form-faceted being beautiful, and the cresting very much the contrary. (See Loudon's Arboretum and Fruticetum Britannicum, p. 1949, for a copious account of this tree.)

The common beech is multiplied by sowing its mast; the varieties by grafting upon the wild stock. To effect this success- fully, it is necessary that the scions should be of at least two years' old wood, and the grafts must be sashed and then earthed up. If one year old wood is used the scions rarely take.

There is no doubt that the beech is the plant called Fagus by Virgil; but the Fagus (φυτος) of Theophrastus seems to have been some sort of oak with sweet scorns, and is more probably to be taken as the common beech, of which the wood is used for the making of the scions mentioned by the Querelus Esculius Linnaeus.

FAHLORE, Fahlerz, grey copper ore. Of this there are two varieties, the arzenical and the antimonial; the former occurs crystallized and massive; the primary form of the crystals is cubic, but the regular tetrahedron is the predominating crystal. Colour steel-grey. Opaque. Lustre metallic. Sp. gr. 4.8, 5.1. Hardness 3.5-4.5. Brittle. Cleavage parallel to the planes of the tetrahedron, very indistinct. Fracture conchoidal.

Massive Variety.—Amorphous. Structure, granular to compact.

It occurs in Cornwall, Hungary, Saxony, &c. A specimen from Freiberg, analyzed by Klapproth, yielded—

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>Sp. Gr.</th>
<th>Hardness</th>
<th>Brittleness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>AsS</td>
<td>4.80</td>
<td>2-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Copper</td>
<td>Cu</td>
<td>4.52</td>
<td>2.5-3</td>
<td>1-5</td>
</tr>
<tr>
<td>Iron</td>
<td>Fe</td>
<td>5.2</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Sulphur</td>
<td>S</td>
<td>2.8</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Silver</td>
<td>Ag</td>
<td>10</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Loss</td>
<td></td>
<td>2</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
</tbody>
</table>

It frequently contains a much larger quantity of silver, and not uncommonly zinc. Antimonial Fahlores.—Occurs crystallized in modified tetrahedrons. Colour dark lead-grey, approaching to iron-black, both externally and internally; not very brittle.

Analysis of a specimen from Kapnie by Klapproth:—

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>Sp. Gr.</th>
<th>Hardness</th>
<th>Brittleness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>Sb</td>
<td>5.2</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Copper</td>
<td>Cu</td>
<td>4.52</td>
<td>2.5-3</td>
<td>1-5</td>
</tr>
<tr>
<td>Iron</td>
<td>Fe</td>
<td>5.2</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Sulphur</td>
<td>S</td>
<td>2.8</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Silver</td>
<td>Ag</td>
<td>10</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Loss</td>
<td></td>
<td>2</td>
<td>2.5-3</td>
<td>0-5</td>
</tr>
</tbody>
</table>

FAJULONITE, Trikliolite. Occurs crystallized and massive. Primary form of the crystal a right rhombic prism, but it usually occurs in imbedded, regular, hexagonal prisms. Colour yellowish, greenish, and blackshonk. Nearly or quite opaque. Lustre resinous. Sp. gr. 2.66 Hardness 5.5-6.5. Streak greyish-white. Cleavage perpendicularly to the axis of the prism.

It is found at Fablon, in Sweden. Before it is reduced to a blow-pipe alone it becomes grey, and fuses on its thinnest edges; with boric it melts slowly into a coloured glass.

According to Hisinger it consists of—

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>Sp. Gr.</th>
<th>Hardness</th>
<th>Brittleness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>SiO2</td>
<td>46.74</td>
<td>6-7</td>
<td>0-5</td>
</tr>
<tr>
<td>Alumina</td>
<td>Al2O3</td>
<td>26.73</td>
<td>6-7</td>
<td>0-5</td>
</tr>
<tr>
<td>Magnesia</td>
<td>MgO</td>
<td>3.5</td>
<td>4-5</td>
<td>0-5</td>
</tr>
<tr>
<td>Oxide of iron</td>
<td>Fe2O3</td>
<td>5.11</td>
<td>2-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Oxide of manganese</td>
<td>MnO</td>
<td>0.43</td>
<td>2-3</td>
<td>0-5</td>
</tr>
<tr>
<td>Water</td>
<td>H2O</td>
<td>13.5</td>
<td>1-2</td>
<td>0-5</td>
</tr>
</tbody>
</table>

FAHRNHEIT. [THERMOMETER.]

FAINTING. [SYNCOPE.]

FAJOUm, a province of Egypt to the west of the Libyan ridge which bounds the valley of the Nile on the west. About 12 miles north-west of Benisouf there is a depression in the ridge about six miles in length, which leads to the plain of the Fajoum. This plain is of a circular form, about 40 miles from east to west and about 30 from north to south. The northern and north-western part of this plain is occupied by the lake called Birket el Keroun, which spreads in the form of a crescent about 30 miles in length and about 15 miles broad towards the middle. A range of naked rocks bounds the lake to the north and joins towards the east the Libyan ridge which skirts the valley of the Nile. To the west and south the plain is bounded by lower hills which
divide it from the Libyan desert. It forms in fact a basin with only one opening or outlet to the east towards the Nile. The Bahir Yussouf, or great canal, which runs parallel to the Nile and forms the same bank as that mentioned, at a place called Kom Wawoum el Hogar, are the ruins of Baceuh. The direction of the principal streets and the plans of many of the houses may be distinctly traced. The site of the ancient labyrinth has not yet been ascertained; Wilkinson thinks it was near the south-east bank of the lake; some of the old Christian monuments: the village is now occupied one half by Copis and the other half by Mohammedans, who seem to have come here in harvest time.

The mountains along the north bank of the lake are one, on which the rains fall annually, are said to contain salt, and to this circumstance the saltness of the waters of the lake is attributable by some. As the lake now receives but little of the waters of the Nile, the bitterness of its water must have increased. No fish is said to be found in it, and Belzoni, at the time of his visit, saw nothing upon it except a crazy kind of ferry-boat.

South of the Faiyum there is an opening through the ridge of low hills leading into a smaller circular plain or basin, with a small lake called Birket el Garqah, which has one or two hamlets on its banks. A small stream from the Bahir Yussouf runs into it. The road-track of the caravans to the smaller oasis passes through this place. (Descriptive and Historical Texts in the Library of Egypt, ed. J. I. L. Brown; Belzoni; and Wilkinson's Topography of Thebes.)

Faire, an annual or fixed meeting of buyers and sellers; from the Latin feria, a holiday. Fairs in ancient times were chiefly held on holidays.

Antiquely, but not now, flourishing towns were established, and the necessary or ornamental of life, from the convenience of communication and the increase of provincial civility, could be procured in various places, goods and commodities of every kind were chiefly sold at fairs; to which, as to one universal market, the people resorted periodically, and supplied most of their wants for the ensuing year. The display of merchandise, and the conflux of customers at these principal and almost only emporia of domestic commerce, was prodigious; and they were therefore handsomer and more splendid than the bazaars of finer life, his 'History of English Poetry,' has given us a curious account of that of St. Giles's hill or down, near Winchester. It was instituted and given as a kind of revenue to the bishop of Winchester by William the Conqueror, who, by this charter, permitted him to continue the fair, with the consequence of new royal grants. Henry the Third prolonged its continuance to sixteen days. Its jurisdiction extended seven miles round, and comprehended even Southampton, then a capital trading town; and all merchants who sold ware in that circuit were required to register themselves at the bishop. Officers were placed at a considerable distance, at bridges, and other avenues of access to it, to exact toll of all merchandize passing that way. In the main time, all shops in the city of Winchester were shut. In the fair was a court called the pavilion, at which the bishop's justiciaries and other officers assisted, with power to try causes of various sorts for seven miles round. Nor could any lord of a manor hold a court-baron within the said circuit without license from the pavilion. During this time the bishop took toll of all goods passing through the gates of the city. On Saint Giles's eve, the mayor, bailiffs, and citizens of the city of Winchester delivered the keys of the four city gates to the bishop's officers; who, during the said sixteen days, appointed a mayor and bailiff of their own to govern the city, and also a coroner to act within it. Numerous foreign merchants frequented this fair; and it appears that the justiciaries of the pavilion and the treasurer of the bishop's palace of Wednesden received annually for a fair fee, the revenue of which went to the justiciaries and other justices of the bishop's officers who sold branded vessels in the fair, and were called mercadores donantes. In the fair several streets were formed, assigned to the sale of different commodities, and called the Digery, the Porcelain, the Spicery, the Drugery, containing of the shops of those foreign merchants who sold branded vessels in the fair, and were called mercadores donantes. In the fair several streets were formed, assigned to the sale of different commodities, and called the Digery, the Porcelain, the Spicery, the Drugery, containing of the shops of those foreign merchants who sold branded vessels in the fair, and were called mercadores donantes.
chasinoearies in large quantities, which are now supplied by the numerous trading towns.

Philip, king of France, complained in very strong terms to Edward II. A.D. 1314, that the merchants of England had debased from frequenting the fairs in his dominions with the effect that the other goods were of less value; and entreated him to persuade, most, if necessary, to compel them to frequent the fair of France as formerly, promising them all possible security and encouragement.

(See Ryn. Ford, tom iii. p. 42.)

When a town or village was somewhat consumed, by way of assisting to re-establish it, a fair, among other privileges, was sometimes granted. This was the case at Burley, in Rutlandshire, 49th Edw. III. (Abbr. Rot. Orig. in, p. 378.)

Different abridgments of Stowe and Grafton's Chronicles, published by themselves in Queen Elizabeth's time, contain lists of the fairs of England according to the months. There is also An authentic Account published by the king's authority of all the Fairs in England and Wales, as they have been settled to be held since the alteration of the style: noting likewise the Commodities which each of the said Fairs is remarkable for furnishing;* by William Owen, 12mo. Lond. 1736.

No fair or market can be held but by a grant from the crown; and as opportunity offers, fair is rise from some ancient grant, of which no record can be found.

(1 Ind. 220.)


The fair of Frankfurt on the Mayn and Leipzig are still pre-eminent in Europe; the former held at Easter and in the months of August and September; the latter at Easter, May-day and New Year. It is worthy of note that at these times is the mart and exchange of Central Europe, and is visited by merchants and foreigners, from the most distant parts of the globe, sometimes to the number of thirty or forty thousand. The whole book-trade of Germany is centred in the Exchanges of these fairs.

FAIRFAX, EDWARD, was the second son of Sir Thomas Fairfax, of Denton in Yorkshire.* The date of his birth is unknown; but as his translation of Tasso's 'Jerusalem Delivered' was published in 1606, we may suppose that it fell some time in the reign of Queen Elizabeth.

Contrary to the habits of his family, who were of a military turn, he led a life of complete retirement at his native place, where his time was spent in literary pursuits and in the education, as is said, of his own children and those of his brother, who had become the celebrated Lord Fairfax. We learn from his own writings that he was neither a 'superstitious Papist nor a fantastic Puritan;' but further particulars of his life there are none. He is supposed to have died about the year 1672.

It is shown on for his translation of Tasso's 'Jerusalem Delivered,' which is executed in a manner which makes it wonderful how the frigid, jingling, and affected version by Hoole ever survived its birth. The measure which he chose for his work that of the original Italian is one less stately perhaps than the Spanish stanza, but not less fitted for heroic subjects. It consists of eight-line stanzas, of which the first six lines are in terza rima and the last two rhyme with each other. It has this great dexterity over the translation before-cited, that the whole cycle is avoided by the occasional introduction of a different species of rhyme. Moreover, the verses are much more harmonious than those of Hoole; the diction is more simple, and the English more pure. As the time is moving, Johnson's law in criticism and Pope's method of versifying was the only one in respect, we may hope to see Fairfax's translation regain its ascendancy. We may now smile at the critic who asserts that Fairfax's translation 'is in stanzas that cannot be read with satisfaction,' and that 'who have a taste for English poetry,' but we must at the same time regret that a literary school like that of the followers of Pope should have usurped for so long a time such entire dominion as to enable one of its humblest members to make assertions so sweeping and insolent as those contained in the passage from which we have just quoted. (Biographia

* He is said to have been illegitimate, but without sufficient proof.

1 Hoole, Preface to his Translation of Tasso, p. xviii.

Britannica: Preface to Fairfax's Tasso, edition 1748; Preface to Hoole's Tasso.)

FAIRFAX, SIR THOMAS, afterwards Lord Fairfax, the son of Ferdinando Lord Fairfax and his wife, Mary, daughter of Edmund Shield; Lord Mulgrave, was born at Ofley, in Shropshire, which is situated about 12 miles north of Shrewsbury. He was for some time a student at St. John's College, Cambridge; but we do not find that he was eminent as a scholar, for his disposition was inclined to military employment rather than to study. Accordingly, as soon as he left college he enlisted in the army of Lord Vere, and served under his command in Holland. The connexion of Fairfax with Lord Vere afterwards became more close. When he returned to England, he married Anne, the fourth daughter of that peer, who, like her father, was also a descendant of the earl of Oxon. Fairfax did not already possess the same religious and political feelings, he soon imbibed the principles of his wife. When the king began to raise troops, as it was said, for the defence of his person, Fairfax, who foresaw that it was intended to collect an army, in the presence of nearly 100,000 people assembled on Heyworth Moor, presented a petition to the king in person, praying that he would lend to his parliament and refrain from raising forces. In 1642, when the civil wars broke out, he accepted a commission of the Earl of Essex, and was soon raised to the rank of a lieutenant-general in the parliamentary forces in the north. His first employment was in the county of York, where at first the greatest number of actions between the parliamentarian and royalist troops were in favour of the king, whose army was under the command of the Earl of Newcastle. As his family somewhat disappeared, he was despatched from Lincoln, where he was in quarters, to raise the siege of Newcastle in Yorkshire. In this expedition he was successful, not only in the main object, but he also took several garrisons, and on his return to Lincoln was invested as the governor of that city.

FAIRFAX, Thomas, afterwards Lord Fairfax, of Denton in Yorkshire. The date of his birth is unknown; but as his translation of Tasso's 'Jerusalem Delivered' was published in 1606, we may suppose that it fell some time in the reign of Queen Elizabeth.

Contrary to the habits of his family, who were of a military turn, he led a life of complete retirement at his native place, where his time was spent in literary pursuits and in the education, as is said, of his own children and those of his brother, who had become the celebrated Lord Fairfax. We learn from his own writings that he was neither a 'superstitious Papist nor a fantastic Puritan;' but further particulars of his life there are none. He is supposed to have died about the year 1672.

It is shown on for his translation of Tasso's 'Jerusalem Delivered,' which is executed in a manner which makes it wonderful how the frigid, jingling, and affected version by Hoole ever survived its birth. The measure which he chose for his work that of the original Italian is one less stately perhaps than the Spanish stanza, but not less fitted for heroic subjects. It consists of eight-line stanzas, of which the first six lines are in terza rima and the last two rhyme with each other. It has this great dexterity over the translation before-cited, that the whole cycle is avoided by the occasional introduction of a different species of rhyme. Moreover, the verses are much more harmonious than those of Hoole; the diction is more simple, and the English more pure. As the time is moving, Johnson's law in criticism and Pope's method of versifying was the only one in respect, we may hope to see Fairfax's translation regain its ascendancy. We may now smile at the critic who asserts that Fairfax's translation 'is in stanzas that cannot be read with satisfaction,' and that 'who have a taste for English poetry,' but we must at the same time regret that a literary school like that of the followers of Pope should have usurped for so long a time such entire dominion as to enable one of its humblest members to make assertions so sweeping and insolent as those contained in the passage from which we have just quoted. (Biographia

* He is said to have been illegitimate, but without sufficient proof.

1 Hoole, Preface to his Translation of Tasso, p. xviii.
The discontent of the army, who were fearful either that they should be disbanded or sent to Ireland, now rose to a great height. Their complaints were encouraged by Cromwell and Ireton, a council was formed in the army by those who were disposed to be impatient of their situation. They showed an evident desire to form a party distinct from the Presbyterian and the parliament, and to usurp for themselves a greater authority. Although Fairfax was in his heart opposed to these violent proceedings, and saw them with regret, yet he had not the resolution to resign his command. He remained the tool of Cromwell, following his counsels, until the army had become master both of the parliament and the kingdom.

In 1647 he was made Constable of the Tower; and in the following year, at his father's death, he inherited his titles, apartments, and estates. The difference of his condition made no alteration in his life; he continued to attack or besiege the royalist troops wherever they were mustered or entrenched. Many towns in the east, and among them Colchester, which he treated with great severity, yielded to his arms. In December he marched to London, menaced the parliament, and quartered himself in the palace at Whitehall. He was named one of the king’s judges, but refused to act; and he was voted one of the new council of state (February 1649-90), but refused to subscribe the test. In May he marched against the Levellers, who were numerous in Oxfordshire. He continued in command of the army until June, 1650, when, upon the Scots declaring for the king, he declined marching against them, and consecrated the spring march to the purposes of private life. He retired to his house at Nun Appleton, in Yorkshire, which for some years he made his principal residence. He left it (in 1659) to assist General Monk against Lambert’s forces.

In January, 1659-60, he made himself master of York. In the spring of 1660 he was elected one of the council of state by the Rump Parliament, was elected one of the members for the county of York, and formed one of the committee appointed to promote the return and restoration of Charles II. In November, 1661, when the king returned to London from his retreat to Oxford, he returned to his wife, who was now blind and old, and was living at Oxford, and was reconciled to her with an illness, which terminated in his death. He was buried at Bilburgh, near York. He left issue two daughters, Mary and Elizabeth. Mary married the duke of Buckingham; of Elizabeth we have no account.

FAIRIES, a small sort of immortal beings of both sexes in human shape, who are said to haunt houses in companies, to reward cleanliness, to dance and revel in meadows in the night-time, and to play a thousand freakish pranks.

Both sexes are represented generally as clad in green, and the traces of green feet are supposed to remain visible on the grass for a long time after their dances: these are still called fairy rings or circles. They are also said to be in the practice of stealing unbaptized infants, and to be connected with the spirit life.

Besides these terrestrial fairies there was a species who dwelt in the mines, where they were often heard to imitate the actions of the workmen, to whom they were thought to be inclined to do service. In Wales this kind of fairies were said to be immortal and immortal and without the rich veins of silver and lead. Some fairies are said to have resided in wells. It was also believed that there was a sort of domestic fairies, called, from their summer-burnt complexion, Brownies, who were extremely useful and who performed all sorts of domestic drudgery. The words fairy and brownie seem at once to point out their own etymologies.

Bourne, in his ‘Antiquitates Vulgares,’ supposes the superstitious relating to fairies to have been conveyed down to us from the pre-Christian times of the Romans. Others have deduced them from the lares and larvæ of the Romans. Dr. Percy tells us, on the assurance of a learned friend in Wales, that the existence of fairies is alluded to by the most ancient British bards, among whom their commonest name was that of the Spirits of the Mountains. The most general conjecture, however, is, that these imaginary people are of oriental origin, and that the notion of them was first entertained by the Persians and Arabs, whose traditions respecting the fabled beings in their particular country are very similar to those of the Persians called Peris, the Arabs Ghinnish, or fairy-land.

Shakespeare has been singularly happy in his dramatic exhibition of fairies. The belief in these fabled beings has still a fast hold upon the minds of many of our rustic people, which may perhaps be considered as a remnant of that ignorant credulity which was once almost universal. Poole, in his ‘English Farnnassus,’ has given the names of the fairy scenes, as ‘Oberon the emperor; Titania the empress; Periwinkle, Puck, Hobgoblin, Tomain, Tom Thumb, courtiers; Hop, Mop, Drop, Pip, Trip, Skip, Tub, Tiek, Pink, Pin, Quick, Gill, Jum, Tut, Wap, Win, Nitt, the maids of honour; Nymphida, the mother of the maids. Dr. Gray, in his Notes on Shakespeare, i. p. 50, gives us a description, from other writers, of fairy-land, a fairy entertainment, and fairy hunting.

Dr. King’s description of Orpheus’ fairy entertainment (Works, edit. 1776, vol. iii. p. 112), and ‘Oberon’s clothing’ and ‘Oberon’s diet,’ in Poole’s ‘English Farnnassus,’ almost exhaust the extent of our fairy economy. A charm against fairies was turning the clock. See Bishop Butler’s ‘Bora Boreale.’ Anquetil du Perron’s ‘Zenda-Avesta;’ Brand’s Popular Antiquities, vol. ii. p. 27-35; Percy’s ‘Reliques of Ancient English Poetry,’ 2 vols. 8vo. 1673, vol. i. p. 165. We must leave our readers to look further into fairy mythology may consult Sir Walter Scott’s ‘Essay on the Fairy Superstition,’ in the ‘Ministry of the Scottish Border;’ and more especially Keightley’s ‘Fairy Mythology,’ 2 vols. 8vo. 1828, in which the legends of the Irish writers are also copiously digested.

FAITH (fides, in Latin), means belief or trust in a fact or doctrine, and is more especially used to express the belief of Christians in the tenets of their religion, and also by figure to mean that religion itself. The great divisions of Christian faith are, the Roman Catholic, the Eastern Church, or Calvinist, the Episcopal English, and the Protestant or Lutheran churches, have each separate confessions of faith, but they all acknowledge the great fundamental points of the Christian faith or religion, namely, the inspiration of the Scriptures, and the divinity of Jesus Christ. [Corrections.]

In the earlier ages of the church the chief controversies of theologians, especially in the East, ran upon metaphysical questions concerning the mysteries of the Trinity, the Incarnation, and the divine nature of the Son of God. In more modern times the controversy has been frequently upon monsal questions concerning the conduct of men, the requisites of salvation, and the discipline of the Church. Faith, the necessity of which is acknowledged by all Christians, has been viewed in various lights with regard to its essential nature. From the seventh century has taught that faith, or belief in the Redeemer, joined with good works, was necessary for the justification of man:

that good works, that is, works acceptable to God, could only be produced by the Spirit of God influencing the heart, but that the human will must operate with grace in producing them, though the human will alone is powerless to good unless assisted by divine grace. Still, man being a free agent, the will can call on God, through the merits of Christ, to aid human desire. From St. Thomas Aquinas, who was more than a century before the Reformers, who stated the faith and defined the church, the Church has drawn the line from the errors of the corruptions of the Church and the Church. Faith is the means of the justification and salvation of the latter. Luther however and Calvin denied the power of the will to call on God for his grace; they substituted faith, and faith alone, in the name of God, for the Church. This is the essence of salvation, by which faith man firmly believes that his sins are at once remitted. But this faith must be sincere, absolute, without a shadow of doubt or distrust: and as man cannot of himself obtain this, it can only be given to him by the act of faith itself. For man is not only required to believe that faith becomes involved with those of grace and predestination. As for our works, both Luther and Calvin look upon them as absolutely worthless for our salvation. Some fancies, and the Anabaptists among the rest, drew from these the most extravagant and absurd conclusions, and as a consequence, which Luther and Calvin had not anticipated, such as that men might live as profligates as they pleased, and yet, by the inspiration of divine grace, might obtain the faith requisite for their salvation.
The opinions of Luther and Calvin on the subject of faith and predestination have been since considerably modified by many Protestant divines, who have admitted that the will of man must co-operate in order to obtain the grace necessary for justification. The Roman Catholic church admits the merit of good works and repentance, united with faith, for the removal of sin. Salvation, it requires, is by absolute faith in all the decisions of its General Councils in matters of dogma, without the least liberty of investigation on the part of the laity, and with all doubt, for doubt itself is held to be sinful. The Reformed and Protestant churches, generally speaking, hold faith in the fundamental dogmas of Christianity as an essential requisite for salvation.

FAKENHAM. [Norfolk.]

FAKIR, an Arabic word meaning poor, which is applied to several parts of the eastern world. In this sense it is synonymous with the Persian and Turkish dervish. The word fakir is chiefly used in India. There are fakirs who live in communities like the monks of the western world, and others who live singly as hermits, and wander about exhibiting strange displays of self-denial and mortification. Many of them are considered as hypocrites, and others are fanatics or idlers. [Dervish.]

FALaise, a town in France, the capital of an arrondissement, in the department of Calvados, near the source of the River Seine, flowing a few miles from Paris, through Versailles, Dreux, Vernon, and Argentan; in 48° 53' N. lat. and in 1° 14' W. long. The ancient castle of Falaise was one of the residences and strong-holds of the dukes of Normandy, and bore William the Conqueror's arms: it suffered many times, of different kinds, in the early troubles of the duchy of Normandy; in the wars of Henry I. of England with his brother Duke Robert and the Norman lords; in the invasion of France by Henry V. (a.d. 1415); in the expedition of the king from France (a.d. 1420); and in the war of the League, in which Falaise was taken by Henri IV. in person (a.d. 1589). The fortifications, which were much injured in these attacks, are at present in a very dilapidated state: the donjon of the castle is situated on a bold and lofty rock. In the church of Guibry, one of the proudest relics of Norman antiquity: its walls are in some parts eight or nine feet thick. The town stretches along the to* rocky ridge which rises abruptly from a fertile and secluded valley. The streets are wide, and the public fountains impart a freshness to the appearance of the place. Before the Revolution, there were twelve churches: there are now only four; two in the town, and two in the suburbs.

The population in 1822 was 9419 for the town, or 9581 for the town and suburbs. The inhabitants carry on a considerable manufacture of cotton yarn and linen. There is a large fair held in the suburb of Guibry, which is much frequented: it continues from the 15th to the 30th of August: many Norman horses are sold. This town has a tolerable trade, as well as of some commercial affairs, a high school, an agricultural society, and a theatre.

The arrondissement of Falaise contained, in 1832, a population of 62,349. The chief manufactures carried on in it are wool and paper; there are also many oil-mills.

FALAJAS. [P. 63.]

FALCO. [Falconidae.]

FALCON. [Falconidae.]

FALCORNER, WILLIAM, was born about the year 1725, the son of a large family, all of whom, except himself, were deaf and dumb. When very young, he served his apprenticeship on board a merchantman, and was afterwards second mate of a vesel in the Levant trade, which was shippedrecked on the coast of Attica, himself with two other mates. This accounts the foundation of Falconer's fame, by forming the groundwork of 'The Shipwreck,' which poem he published in 1762. The notice which the poem received enabled him to enter the navy, during the ensuing year, as midshipman in the Royal George. After some other appointments, he became purser to the Aurora frigate, and was at some time, somewhere in the Mozambique Channel, during the outward voyage to India, in the winter of 1769.

Falconer was the author of a 'Nautical Dictionary' of considerable use, which he compiled, and his chief claim to reputation consists in 'The Shipwreck,' the excellence of which is owing to the vividness and power of description which pervade the work, and to the facility the author has shown in introducing nautical language. His style is formed on a model which may now be thought erroneous, and is certainly the most artificial imaginable—that of Pope; and the mixture of phrases, such as 'weather back-stays,' 'parrels, linst, and clew-lin,' with the affectations of 'nymph,' 'swain,' 'Papian graces,' etc., form a ludicrous contrast. To call 'The Shipwreck,' its first-rate poem, or to compare it with the Aeneid of Virgil, would not now enter into many men's thoughts, although this was done at the time when it first appeared. Some might even assert that where there is no imagination, there is no poetry; but with all these limitations we must allow that Falconer has done what no one else ever attempted, and we must give him a high place among the writers of didactic poems.

(See Clarke's and Pickering's Editions of The Shipwreck; Irving's Life of Falconer; Chalmers's Dict.)

FALCONET, ETIENNE, was born at Paris in 1716, of poor parents, of a family originally from Savoy. He studied sculpture under Lemoyne, whom he soon surpassed. He executed several groups and statues, which are at Paris, in the church of St. Roch, in the Musée des Monuments Français, and in several private collections. In 1766 he accepted the invitation of Catherine II. to repair to Peters burg, in order to execute the colossal statue of Peter the Great. He remained in that capital twelve years, during which he completed his work, which is now in the square called the Square of the Senate, and is perhaps the finest specimen of an equestrian statue existing. As he and the Russian founder appointed to cast the statue could not agree, Falconet cast it himself. He placed it upon an enormous block of granite, weighing about 1700 tons, which was found in some marshy ground at a considerable distance from Petersburg, and was brought to the capital by machinery. Catherine, who had shown him the greatest attention during the first years of his residence in the Russian capital, grew cool towards him at last, owing to the misrepresentations of some of her courtiers. Falconet returned to Paris in 1778. In May, 1783, as he was going to set off for Italy, a country which he had never visited, he had a paralytic stroke. He survived this misfortune several years, and died in January, 1791. In temper he was eccentric and blunt, but generous and warm-hearted. While at Petersburg he kept up a correspondence with Diderot, which is printed in Diderot's works. He wrote strictures and commentaries on the books of Pline which treat of the sculpture and painting of the ancients; he also wrote 'Observations sur la statue de Marc Aurèle,' in which he does not share in the admiration expressed by many for that work. In general, Falconet had no great veneration for antient art. All his writings were published under the title 'Les essais sur les arts de la sculpture,' 3 vols., 1742-91, 1748-53, which is prefixed an account of his life.

FALCONIDE. Leach's name for a family of Raptorial Birds, or birds of prey. (Rapaces of Illiger.) In this family the destructive power is considered by all zoologists to be most perfectly developed; and we find in the birds, composing it natural instruments for striking, trussing, and dissecting their prey, combined with a power of flight and strength of limbs equivalent to the necessities of the case, whether the prey be aerial, that is, whether it be the habit of the raptorial bird to stand in search of its quarry while the latter is in the act of flight, or whether it may be terrestrial, or, in other words, captured on the ground. Of these natural weapons some ideas may be formed from the cuts here given.
Anatomy.

The power of flight, as Mr. Yarrell observes in his memoir On the Anatomy of Birds of Prey (Zool. Journ. 1850, p. 181), is one of the decided marks of the distinct organisation of birds; and, as one division of the first genus, Falco, appears to possess this power in the highest degree of perfection, he proceeds to consider the conditions necessary to produce such a degree. These, he observes, are large and powerful pectoral muscles; great extent of surface, as well as peculiarity of form in the wing; and feathers of firm texture, strong in the shaft, with the fibrils of the pectoral muscles and connected connective tissue below. "A certain degree of specific gravity," continues Mr. Yarrell, "is necessarily imparted by large pectoral muscles, and the power of these muscles may be estimated by the breadth of the sternum and the depth of its keel; as affording extent of surface for the attachment of the large muscle by which the wing is depressed."

An illustration of this form the breast-bone of the peregrine falcon (Falco peregrinus) is represented, which exhibits the breadth of the sternum, the depth of the keel, as well as the strength of the clavicles; and the power of flight peculiar to all the species of true falcons is still further illustrated by the form and substance of the clavicles, which is circular, broad, and strong, affording a permanent support to the shoulders. That the long and flattened form of the wing in the true falcons, with each feather narrow, firm in consistence, the second the longest, and all gradually tapering to a point, is best adapted for rapidity of motion, may be inferred from the example in the various species of the genera Hirundo, Scopax, Ringa, Charadrius, Procellaria, Sterna, &c.; but that extent of surface and this peculiarity of form in the wing are not in extent of sufficient alone to enable flight, is proved in the genus Larus, the species of which, though capable of exercising their immense pinions with graceful ease for hours in succession, without any apparent fatigue, are still incapable of rapid flight, for want of strong pectoral muscles. The numerous examples also furnish by the Gallinaceous tribe sufficiently evince that immense pectoral muscles are insufficient when coupled with a small round wing, and afforded but a short flight, sustained with great labour, rapid in a small proportion only to the strength and repetition of the pulse, and accompanied by exertion too well known to need further remark. So material also is the perfection of the feather in the genus Falco, that when any of those of the wing or tail are broken, the flight of the bird is so injured that falconers find it necessary to repair them. For this purpose they are always provided with pinion and tail feathers accurately numbered, and the mode of uniting the more perfect feather to the injured stump is described in Sir John Sebright's excellent observations on hawking. The reader who is disposed to go further back will find in the 'Birds of Prey,' &c., &c., heretofore published by George Turberville, Gentleman, (London, small 4to, 1611,) the following chapters:—Of Accidents that happen and light upon a falcon's feathers, and first how to use the matter when a feather cannot be repaired, and then how to ymppe a hawk's feather, hawsoever it be broken or bruised; and four methods of operating, according to the circumstances, are detailed. "How to ymppe the traine of a hawke being but broken, and never a feather wholly or sound." Mr. Yarrell proceeds to observe that it is difficult to estimate the comparative rapidity of flight in different birds, and that our pigeons may appear to possess this advantage in a degree little inferior to the true falcons; but, he adds, the fact is that these birds are deficient in natural courage, and are not often the most just claimants to themselves of those powers with which they are gifted.

"The bodies of all the species of true falcons," writes Mr. Yarrell in continuation, "when deaded of their feathers, are triangular in form, broad at the shoulders and tapering gradually to the tail, the muscles of the thighs and legs of great size; but these charmers are less prominent in the hawks, the bodies of which are more lengthened, the legs long and slender, the pectoral muscles smaller, the wing rounded in form, the fourth feather the longest, the wing primaries broad in the middle, and the inner middle dividing, the feather next in succession, and emarginated towards the end. These two divisions of the genus Falco, although the latter are unequal to the former in powers, are remarkable for their bold character and rapid flight, their invariable mode of striking their prey on the wing, as well as the instinctive knowledge by which they are directed to destroy life, attacking the most vital part, and penetrating the brain with their sharp hooked beak, either by one of the orbits where the bone is very thin, or at the junction of the cervical vertebra with the occiput.

On comparing the bones of our two British eagles, the greater power of flight appears to belong to the Albicilla, that of prehension to the golden eagle, but both exhibit various indications of great strength.

"By an extended examination of the different species of buzzards and harriers, it will be found that the characters described as necessary to produce rapid motion decline gradually. The sternum decreases in size, the keel loses part of its depth, the clavicles and furca become more slight, while the form of the furcula, the cavity below the neck, as well as the general downy texture of the plumage, indicate the approach to the genus next in succession. Of the bones of the different species of the genus Falco generally, it may be added, that they are remarkable for their strength, while the muscles are cylindrical, being furnished with numerous transverse spongy processes within the tubes, and the distribution of air throughout their internal cavities. The humerus is supplied with air through several orifices upon its inner and upper surface, and some difference will be found in the angle at which this bone is articulated with the clavicle to accomplish the ascending flight of the sky.
lack, in contradistinction to the precipitous horizontal direction of the falcons. The thigh bone is also supplied with air by an orifice at the situation which answers to the front of the great trochanter; the large bones forming the pelvis, the vertebrae, sternum, furcula, clavicles, scapulae, and even the ribs, are all furnished with apertures for the admission of the air into the abdomen, the axillae, sides, and thorax. This distribution of air to the bones does not seem however to be absolutely necessary for flight, since the young birds of our summer visitors appear to perform their first autumnal migration with perfect ease and celerity, at an age when the cavities of their bones are filled with marrow.

'The various characters of the feet are too obvious to require particular notice.'

The reader is referred to the article Brus for the details of the structure of the foot of the Falconidae, as exemplified in the Sparrow Hawk (vol. iv., pp. 424, 425); and we shall now endeavour to give a sketch of the other internal parts worthy of notice, and especially of the organs of the senses.  

**Orchards of Digestion.**—In the Museum of the Royal College of Surgeons in London (Physiological Series), the reader will find a preparation (Gallery, 522 A) of the stomach of the golden eagle. It is laid open, so as to show the orifices of the numerous gastric glands of the proventriculus, the smooth lining membrane of the gizzard, and the valvular structure of the pylorus. The gastric fist is very true, and there is an orifice that externally it appears to form one continued cavity with the proventriculus and stomodaeum. On the outer surface of the latter may be observed the two shining tendons from which the muscular fibres radiate; these however form a very loose and other ingenuous bird, a small quill is passed through the pylorus, which is guarded within by three cuticular tubercles, two on the upper side of the orifice and one below which fits into the interspace of the preceding. The crop has not been preserved in this preparation; but in Mr. Yarrell's (vol. i.) 'Observations on Digestion' (Animal Economy), says, 'There are a few animals that do not eat flesh in some form or other, while there are many who do not eat vegetables at all; and therefore the difficulty to make the herbivorous eat flesh is not so great as to make the carnivorous eat vegetables. Where there is an instinctive principle in an animal, directing it either to the one species of food or the other, the animal will certainly die rather than break through of its own accord that natural law; but it may be made to violate every natural principle by artificial means. That the hawk tribe can be made to feed upon bread I have known these thirty years; for to a tame kite I first gave fat, which it ate very readily; then tallow and hutter; and afterwards small balls of bread rolled in fat or butter; and by this means gradually, if it be persisted in, it will seem to thrive as well as when fed with meat. This, however, produced a difference in the consistence of the excrements; for when it ate meat, they were thin, and it had the power of throwing them to some distance; but when its species, he adds, is in length, compared with that of the dog, like the excrement of a common fowl. Spallanzani attempted in vain to make an eagle eat bread by itself; but by inclosing the bread in meat, so as to deceive the eagle, the bird swallowed and digested it in the same manner.

Mr. Yarrell observes, that the esophagus offers nothing peculiar beyond that of other birds not possessing the power of minutely dividing their food. It is plicated lengthways, allowing great extension, and its separation from the stomach is very easy. The same author notices an opportunity which occurred to him of observing the castings or pellets of some eagles, which had been occasionally fed with dead pigeons. These castings showed that the vegetable food, such as peas, wheat, and hemorrhagic food came out with the feathers in the crops of the pigeons, remained entire, but somewhat enlarged and softened by heat and moisture. In these cases no part of the bones remained.

The intestines of the Falconidae are in general short and large, but Mr. Yarrell remarks that the Osprey is an exception to this rule, and that to the thin membranous stomach of this bird there is attached an intestinal canal measuring 10 feet 8 inches in length, and in some parts exceedingly a crow-quill in size. The canal in most of the species, he adds, is in length, compared with that of the bird itself, as three to one; but in the Osprey it is as nine to one; and he observes that in the latter the intestinal canal is very long, equal in size, and without cesophageal appendage; the seal, too, has long intestines with a small cæcum. Mr. Yarrell inquires therefore if it may not be concluded that the small quantity of nutriment which fish, as an article of food, is known to afford, renders this extent of canal necessary in order that every portion may be examined by. The Falco and the Falconidae amount to no more than minute rudiments.  

**Organs of Respiration.**—There is nothing very remarkable in these organs among the Falconidae. The trachea is composed of two membranes, inclosing between them numerous bony rings, forming a more or less perfect tube. The rings are strong and compressed. The point of divarication, the cross-bone and bronchus constituting together the inferior larynx, are of the most common form, having but one pair of muscles attached; and the voice, though perfectly formed, is not delicate or of much power. (Yarrell.) Falco muscius seems, however, to be an exception, and it would be desirable to examine its tracheas for the purpose of ascertaining whether it is not organized more after the fashion of that of the singing birds.  

**Organs of Sense.**—Touch.—It might be expected that in the Falconidae the sales of the feet and lower surfaces of the toes which come so closely into contact with the living prey would be endowed somewhat more largely with the sense of touch than those of birds which have no such close contact. In the several orders of birds, however, no differences of this kind are observable. (See Preparations (Physiological Series) a preparation (No. 1490) of one of the feet of an eagle, with the cuticle removed, showing the papillae and cushions of the euta on the under surface of the foot.)

**Smell.**—In the same Museum (same series, No. 1482) will be found the tongue, larynx, and lower jaw of the Golden Eagle (Aquila chrysaetos). The tongue is long and divided into two lateral portions by a deep longitudinal furrow; at its base is a series of small retroverted papillae, arranged in series, and the larynx the surface is studded with the orifices of numerous glandular follicles: two rows of retroverted spines again occur behind the larynx. There is a row of glandular follicles on either side of the fraenum linguae, and a large central band, forming the eustachian tube. The preparations No. 1483 and 1484 exhibit respectively the tongue and fauces of an Erne (Haliastus ablitca), and the tongue and larynx of an Osprey (Pandion haliaetus).  

**Smell.**—A longitudinal section of the anterior part of the head of the Golden Eagle will be found in the same Museum and series (No. 1538). The preparation shows the turbinate cartilages and cavity of the nose, together with part of the orbit and the air-cell continued from it anteriorly, and situated below the nose. The parts are minutely cuticularized, and the valvular disposition of the cartilages and connective tissue covering the middle turbinate cartilage is well displayed. No. 1539 is a transverse section of the head of an Erne (Haliastus abilitca), showing the convolutions of the middle turbinate cartilages, and the disposition of the pituitary bodies on the respective side of the convolutions. The air-cells in the superior maxillary bones, and their communications with those which are situated in front of the eye-ball, are well seen in this preparation. Bristles have been inserted into the lateral aspect of the eye-ball, in some of which the Eustachian tubes, the respective conduits of the eye and ear for conducting their superfluous moisture to the nasal passages. An anterior transverse section of the head of the same eagle is shown in No. 1440, which exhibits the external auditory orifice on the anterior termination of the middle turbinate cartilages, and of the Lachrymal ducts, in which bristles are placed; together with the communications of the maxillary airs-cells with the cancellous structure of the upper air-cells of the eagles (Cat. Gallery, vol. iii.).  

**Hearing.—**Nothing remarkable.

**Sight.**—"The extraordinary powers of vision," says Mr. Yarrell, "which birds are known to exercise beyond any other class of animals are in no genus more conspicuous than in that of the Osprey," Falco. Their destination, elevating themselves as they occasionally do to a great height, is to deject the power required of perceiving objects at very different distances and in various directions, as well as the rapidity of their flight, seem to render such a provision necessary. The eyes of birds, which are larger in proportion than those of quadrupeds, and exhibit also two other peculiarities. The one is the maruapnum, a delicate membrane arising at
The breadth of the eye, and terminating at or near the edge of the crystalline lens: this is a ring of thin bony plates, enveloped by the sclerotic coat. Comparative anatomists do not seem to be agreed as to the means by which birds obtain their power of vision, whether by an alteration in the form or situation of the crystalline lens, or by both, either or both of which, the greater portion of aqueous humour which extends to the inner region to possess would seem to facilitate. The existence of muscle attached to the inner surface of the bony hoop of the sclerotica, and inserted by a tendinous ring into the internal surface of the cornea, as shown by Mr. Cran in the Golden imbricated bony ring in the cornea may be altered, gives a still greater scope of action, since two or at the utmost three varieties of powers, the sphere of distinct vision may be indefinitely extended.

Whether the five species called the True Falcons possess, with other exclusive range, any power of vision beyond their generic companions, would be difficult to ascertain; but it may, while on this subject, be worthy of remark, that the ridges of the Gypaëon, Peregrine, Hobby, Merlin, and Kestrel, are hazel-brown, or still darker, while those of all the hawks, buzzards, barbets, and kites, are of various shades of yellow. I refer only to adult birds, and do not remember a single exception.

Mr. Yarrell observes, that the number of bony plates forming the ring in the White called Eagle there are but fourteen; and he adds, that the external convex form of the bony ring in the Golden Eagle will be found to extend through all the species of every genus of birds, except the owls, in the same manner.

In the Museum of the College of Surgeons (Physiological Series, Gallery) are the following preparations illustrative of this part of the subject. No. 1741. The head of an eagle, with the eyes in situ. In the left eye the anterior part of the iris and the humour have been removed to show the iris expanding from the oblique line by which the optic nerve terminates, and the vascular processes of the iris, extending forwards from the centre of the optic fissure. In the right eye a lateral section of the coats has been removed, together with the humour and a part of the iris, showing the uniformly dark-coloured choroid, the thin but dense texture of the sclerotic, and the zone of vascular plates which supports the projecting cornea. The nictitating membrane is preserved in situ. It is of an unequal quadrilateral figure, broader below and inclined a little backwards, with a slight convexity towards the nasal side of the eye-ball. The large size of the eyes is worthy of notice. No. 1742 exhibits a longitudinal section of the eye of an eagle, showing the oblique manner in which the optic nerve perforates the sclerotic and its extended termination, from which the retina expands in a plicated manner: only the folds at its origin are here preserved. The parts being minutely injected, the vascularization of the choroid is shown; and also the breadth of the ciliary zone, the breadth and thickness of the bony lamina surrounding the base of the cornea, the thickness of the corneal wall, and the large size of the anterior chamber of the eye. No. 1743 is the eye of an eagle, with a portion of the coats removed, from one side, showing the folds of the mesial membrane, from which the colouring matter has been removed. In No. 1538 above alluded to portions of the eye and eyelids with the nictitating membrane are preserved, showing the situation of the two puncta lachrymalia, through which the bristles are passed along the ducts to the nose; and in No. 1539, at the back part of the separation, the left eye-ball is laid open, showing the muscular membra.

The right eye-ball is entire, and the adductor, abductor, and depressor oculari, together with the quadratus and depressor muscles of the lids, are well displayed. See also No. 1540, as referrible to the origin of vision. No. 1756 exhibits the eye-ball, with portions of the horizontal eye-lids, the vertical eye-lid, or membrana nictitans, of an eagle. The quadratus nictitantis may be observed to have a more extensive origin than in the ostrich, and both muscles of the third eye-lid are relatively larger. The cornea is cut away, and the nictitating membrane raised, to show the terminal end of the duct of the Harderian gland, in which a blister is placed. Bristles are drawn through the two puncta lachrymalia. The round and slightly concave tarsal cartilage of the lower eye-lid may be observed: the upper lid has no tarsal cartilage. In No. 1757 the three eye-lids of an eagle are shown, and the tarsal cartilage, which is raised as in the act of closing the eyes, is shown. (Cat. Gallery, Physiol. Series, vol. iii.)

Natural History.

Aristotle divided the Falconidae into Aquai or Acriai (Eagles), Lipaeac (Hawks), and Yavii (Kites), with many subdivisions. Mr. Vigors is of opinion that the division Lipaeac (Hierax) of Aristotle comprises all the Falconidae of Vigors which belong to the tribes or sub-families of Hauki, Falcons, and Buzzards. Pliny separates the group into Aquai (Eagles) and Accipiters (Kites), and Accipiters are used by him, the rest of the Falconidae. The subdivisions of both Aristotle and Pliny do not differ much from the subdivisions of some of the modern zoologists.

Belon, beginning with the Owl, has a table from the Galeri to the Eagles; thence to the Gerfaut, which he gives as the Morphona, Moryhna, Nittophona, Pianos, Pianus, Clagus, and Clagura of the Greeks, and Anatiria of the Latins; next he places the Osfrage, which he makes the Halcaneus of the Greeks, the Agielus or pigeon of the modern Italians, and gives Aquila marina as the Latin name. He then treats of the Ostequagrus as the Phineus of the Greeks, Aquila barbata in Latin, recording it provisionally as a species of Vatule (Petit Vautour), and next describes the Buzzard (Busard) as a kind of Buzard Eagle, and as the Gypteakos, Peronocerus, or Oripelargus of the Greeks. Then comes the Goian or Boudure, which he describes as living upon rats, mice, frogs, lizards, &c., caterpillars, and sometimes slugs and serpents, observing that it begins very early and that it is taken frequently in winter for the sake of its flesh, which is good for food. This he supposes to be the Hierax, called Phrynocyotos by the Greeks, and gives Rubetarius Accipiter as the Latin name. Jean le Blanc, or Osseus Saint Martin, which he considers to be the Panormus of the Greeks, follows, and is succeeded by another Osseus Saint Martin, or Blanche-queue. Belon then gives an account of the birds of prey employed in falconry. The Sucro and her Success, the Aoutour and her Tiercelet, the Serpent-prendeur, the Busard, and the Hierax; and his Tiercelet.* He then describes the Hobroen (Hobby?), the Esmerillon (Merlin?), the Esperoier (Sparrowhawk?), the Lanier and Laneret, and the Crossereile (Kestrel?). Next follow the Butcher-birds, then come the Kiter (Milan Royal, Milan Noir—Milvus) and (the Cacho interveniens from a supposed similitude to the Birds of Prey) the Oule.

Passing by Gascon, Aldrovandus, and Jonston, we pause to notice Williby’s arrangement. He separates the carnivorous and rapacious birds, called Birds of Prey, into the Diurnal (those that prey in the daytime) and the Nocturnal (those that fly and prey by night). The following is his table of the Diurnal section.

The Great-er, and those either.

The more generally called Eagles: the Golden Eagle, the Sea-Eagle, the Black Eagle, &c.

The more cowardly and squalish, called Falcons.

The more generous, among which are the Red Kite, the Black Kite, and the Cuckoo.

The more generous, among which are the Buzzards, the Black Buzzard, &c.

The moregenerous, which are the Saker, the Falco Saker, and the Goshawk.

The less generally.

The Lesser.

The little largest.

The more cowardly, and squalish, and of the race of the buzzard, which are the Saker, and therefore by our forefathers neglected, and permitted to live at large.

The Great.—The Common Buzzard, Black Buzzard, &c.

The Lesser.—European, Butcher-birds of Sheriffs, &c.

* It is a general rule that, in the Falconidae, especially among the smaller birds of prey, the female is larger than the male.
De Blainville divides the Hapalotes into the Diurnal and the Nocturnal. The former he divides into the Anomalus (the Secretary, Serpantarius); and the Normal (Falco, Linn.).

M. Latreille separates his first order of terrestrial birds (Raptatores) into two tribes, the diurnal and the nocturnal. The first contains two families: 1st, The Vulturines (Vultures); 2nd, The Accipitrins. The latter consists of the genera Agile, Pygargus, Balbuzard, Harpie, Agile-Autour, Asturine, Messager, Autour, Epeiroter, Elane, Milun, Bunting, Buzzard, Buteo, Falco, Falcinellus, and Oeul.

C. L. Bonaparte (Prince of Musignano), in his Tabella Anamalica, divides his 'Ordine 'Accipitrins' into the Familia Vulturini, and the Familia Raptaces. *These last he separates into the Diurni, with eyes on the side of the head, the Vulturini, with eyes on the front, and the nocturni, *Occhi sulla faccia.* His diurnal rapacious birds consist of two genera, viz., Gypogeranus and Falco. The latter comprises the following sub-genera——Aquila, Haliaeetus, Pandion, Falco, Astur, Milunus, Elaneus, Buteo, Circus.

M. Lesson, in common with other zoologists, separates his first order, the Birds of Prey, Accipitrines, or Raptaces, into the diurnal and nocturnal. The first embraces three families:—1st, The Vultures; 2nd, The Falcons, or Falconidae, which he subdivides into the Noble Birds of prey, viz., the genera Falco, Ictinia, Falco, Phaetum, and Genus; and the Ignotoble Birds of prey, viz., the genera Aquila, Haliaeetus, Pandion, Circuses, Caracara, Harpyia, Moropus, Cymulti, Astur, Milun, Falcina, Elaneus, and Aquila, Flaming, Buteo, Circus. 3rd. The Messagers, or Tyrantoidea, consisting of one genus only, Serpantarius, the Secretary Falcon.

Mr. Swainson (Fauna Boreali-Americana) remarks that in contemplating the diurnal birds of prey, prepared by Linnæus under the genus Falco, we can be at no loss to distinguish them from the nocturnal and short-tailed Falcons and the Sparrow-hawks. Their peculiarities, he adds, did not escape the notice even of the earliest systematic writers, and the moderns, he observes, have only confirmed the justness of the distinction. But with regard to the remaining genera, under which the Falco is divided, he says, they are not, indeed, as regards the leading divisions, for here likewise the anterior had long ago anticipated our distinctions between the Eagles, Kites, and Buzzards. It is not, therefore, to these groups, taken per se, that any doubts can attach on their respective peculiarities, but rather to their relative rank with those that are considered typical. These doubts, in Mr. Swainson's opinion, can only be solved by analysis; and from an attentive consideration of the difficulties arising from the want of materials in our museums, he believes that the Falco has been, and is, the subject of several modern writers upon this family. He admits that it has been sufficiently proved that the various forms of which it is composed exhibit, as a whole, a circular succession of affinities; but the true series of the secondary groups, among themselves, has not, he says, yet been accurately established; yet it is evident that the orders, which in the true falcons form their own respective circles cannot militate against the belief that such is their true distribution. "It remains, therefore," continues Mr. Swainson, "to be considered whether there is presumptive evidence to believe that the true remains, or, as it is sometimes termed, namely the Buzzards, Kites, and Eagles, form one circular group, independent of their affinity to the two former. The true Buzzards, of which the Vivacites and the Lagopus, with the rest of their tribe, are slender long-winged birds; the bill is small, short, and considered mainly for this reason; they agree with the true falcons, yet they are well known to be distinguished from them by wanting the toothed-bill, and by the shortness and graduated abbreviation of the exterior quill-feathers. If the Buzzards had proceeded in a simple course from the buzzards to the falcons, we should have bad birds uniting the distinctions of both variously modified. Both these groups being composed, in their typical examples, of slender long-winged birds, with bills, without any species exhibiting the reverse of such characters, and interfering between the two forms, it would certainly appear anomalous, on the supposition of a simple series of affinities being aimed at. Yet, that such birds are to be found, even among the few that we are subsequently to consider, is unquestionable. Let us then take the Buteo borealis, which, as being more allied to the falcons than to the kites, may be considered an intervening
FAL

From between the Buteo vulgaris and Falco. We have a large-sized, heavy bird with short wings, reaching to more than half the length of the tail; while the elongated bill, unlike either of that of Buteo or Falco, obviously assimilates to that lengthened form which belongs to the Eagles. Now, upon the supposition that a bird so constructed is intended to group itself between Buteo and Falco, and at the same time to unite the former with the Eagles, the singularity of its structure is no longer surprising: but if we consider it with a simple reference to the passage between Buteo and Falco, we are almost tempted to suspect that, in this instance, a real saltus has been made. While upon this subject we may cite an acute observation made by Prince C. Bonaparte, that: 'the boreale is almost as much an Astur of the first section as a Buteo.' A proof, at least, that its affinities to Astur and to the aberrant cacti adjoining that group have not escaped observation.

Our idea that the buzzards are truly united to the eagles is still further strengthened by the Buteo pterococes, Temm. \* \* \* In this species the wings, as in Buteo, are remarkably long, but the bill is so considerably lengthened, that we may judge alone from this member, we should have no scruple in placing the bird among the Aquilae. On the other hand, it must be remembered that, as every group, from the highest to the lowest denomination, when perfect, contains a representation of the other four, united to a form proper to itself, so might we expect that one division of the buzzards would represent the true eagles.

To ascertain, therefore, whether the resemblances above stated are those of analogy or of real affinity, recourse must be had to strict analysis. Now this, in our present state of knowledge, cannot be done at least from the resources to be found in this country. We have thought it advisable to cite the above facts, drawn from the structure of the birds themselves, as likely to awaken the attention of ornithologists to a further investigation of the subject; they will, at least, show that our opinion on the unity of the three aberrant groups is not entirely without foundation. Mr. Swainson considers the relative value of the whole group equivalent to that of Falcot or Strix in its own order, and to the families composing the Rauores, Grallatores, and Nataores, and he enumerates the five principal divisions of the family, arranging the subordinate forms as sub-genera; but in considering the five forms of the Falconidae as genera, rather than sub-families, he guards himself against the supposition that he may mean to insinuate that the minor distinctions which have been dwelt upon by several able ornithologists who have investigated this family, are either trivial, or that they deserve not to be brought immediately before us. On the contrary he recommends to others the plan adopted by himself, viz. the minute examination of every change of structure, and the assembling together in larger groups such species as agree in certain peculiarities. Further, he would proceed, in certain cases, even to impose a name upon such groups, but in a family already so crowded by generic names he considers it essential to preserve a distinction between groups of unequal value; and to elevate sub-genera, or forms of transition, to a rank they do not hold. Milvus, Polyborus, Daptris, and Ibycter, are, unquestionably, in his opinion, of the latter description, each confined but to one species, and he says that he has neither of the same natural group in his cabinet, equally deserving a patronymic name. By regarding these as genera, each, as he thinks, is made equivalent to the whole genus of typical falcons; whereas, by representing them as lesser variations, which he considers them in truth to be, the student immediately perceives that their station is subordinate.

The genera into which Mr. Swainson divides the Falconidae are Falco, Accipiter, Buteo, Cymindis, and Aquila; and he gives the following table as the concentration of his remarks in reference to the sub-genera of Falco.\*  

<table>
<thead>
<tr>
<th>Sub-genera</th>
<th>Genera of the Falconidae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falco.</td>
<td>Pre-eminently typical; bill acutely toothed; wings pointed, rather long.</td>
</tr>
<tr>
<td>Harpagus.</td>
<td>Wings shorter, rounded; feet with entire transverse scales.</td>
</tr>
</tbody>
</table>

\* Natural History and Classification of Birds. London, 1856.

3. Aberrant group, 

Lophotes. Feet short; head crestless. 

Aricea. Feet small, very short; soles broad and flattened; outer toe and claw shortest. 

Ganmoronyx. Bill neither notched or (nor) 

Aquila. Feet strong. 

By throwing each of these columns into their respective circles, and then bringing them into juxtaposition (which he does in the work quoted) the same results, he remarks, will follow. Into the accipitrine circle he admits Ictinia, provisionally, Accipiter (type), Astur (Goslauks), Halieticus (H. Pondercrownas), and no more. In the Aquiline circle he retains four 'types.' viz. Pandion, Harpyia, Aquila, and Ibycter. In the Cymindian or Milvine circle he places Polyborus, Cymindis, Elanus, Naculor, and Circus, the last with a query, and in the cut of the circle it is not mentioned. In the Buteonine circle Milvus, Circus, and Buteo.

Mr. Vigors who, as we have seen, first proposed the application of the Quinary System to the Falconidae, and indeed to the birds in general, thus defines the family which is the subject of our inquiry, and thus follows out his arrangement:

Falconidae. (Loch.)

Head plumose. Beak strong, hooked, with a cere at the base. Nostrils lateral, more or less rounded, open and situated in the cere. External toes especially connected with the middle toes. Claws or nails strong, very sharp, very much incurved, and retractile.\*  

1st. Sub-family, Aquilina. 

Beak long, hooked at the apex only. Fourth quill the longest.

Long-winged Eagles.

Genera. Ibycter. (Vieillot.)

Beak convex above. Lower mandible notched at the apex, and subacute. Cere naked. Cheeks, throat (gula) and crop (quantum) featherless. Claws acute.

Mr. Vigors remarks that the type of this genus is Falco aquilins of Gmelin, Petit Aigle d'Amérique of Buffon, and that he believes it still stands single in the genus.

Description. Beak carunculate; cere and feet yellow; orbita yellow; triceps orange; body above, emerald; below, red going into white; neck purplish to rufous; claws black. Gmelin gives it as the Red-throated Falcon of Latham. 

Locality, South America.

\* The characters of the sub-families and genera are from those given by Mr. Vigors.
Daptrius. (Vieillot.)

**Falco** occurs above. Lower mandible angular beneath, notched at the apex, obsolete. **Cere** with scattered hairs. **Orleas, throat, and crop** barbless. **Cere** entire.

"How far," writes Mr. Vigors, "the two preceding genera of M. Vieillot are sufficiently distinct from each other, or from the remainder of the naked-crested **Falco**s, it is not for me to hazard an opinion, without the opportunity of more accurate examination of the birds than is at present within our power, and a more accurate knowledge of them than a mere description affords us. It would appear, however, that one group at least, that of *Daptrius*, is sufficiently distinguished from the other *Falco* with the naked cheeks, by the difference of its food and habits. The accounts which have reached Europe of its mild and gentle manners and vegetable food have even induced some naturalists to refer it to the Gallinaceous Leagues. I have strong doubts indeed whether the birds that compose this genus may not belong to quite a distinct station from the present, and be referable to one of those groups which I have elsewhere observed to be wanting among the Birds of Prey, to perfect that chain of affinities which is to be found complete in all the other orders. It is impossible, however, at present, to come to any decision on the subject. While our materials for classification are scanty, the most that is in our power is to conjecture the place which more perfect information will enable us to assign any group hereafter. For the present, I may leave the genus before us in that situation, between the *Falco* and the *Falcoinae*, which they have hitherto been generally supposed to fill."

*Example, Daptrius aur.*

**Description.**—Black with bluish reflections; tail white at its base large, and rounded; head and claws black; eye blackish, face round the eyes naked and of flesh-colour; feet yellow. Length from 14 to 15 inches. **This is the brun noir of Vieillot, and the Caracara noir, Falco aterrimus, of Temminck. Locality, Brazil and Guiana.** M. Lesson notes it as probably a genus for suppression.

**Polyborus. (Vieillot.)**

**Head and Face of Polyborus Aur.**

**Polyborus volans, Vieillot.** The Brazilian Caracara Eagles.

We select Mr. Bennett's **Description** and general history of this species as the most complete. After giving the generic characters, and observing that the wings nearly equal the tail in length, that they are of a round form with the third and fourth quills longest; that the legs are rather long, and the claws of moderate length and curvature, but with little power of grasping, the last-named author thus proceeds:—"In the Brazilian Caracara the whole upper surface of the head is black, with the feathers slightly elongated backwards, and capable of being partially elevated in the shape of a pointed crest. The entire neck is of a light brown colour, which also forms the ground colour on the breast and shoulders, but with the addition on these parts of numerous transverse wavy bars of a darker brown. Nearly all the rest of the plumage is of an ordinary uniform shade of blackish brown, with the exception of the tail, which appears at the base of a dirty white, with numerous narrow, transverse, undulated bands of a dusky line, and, in its terminal third, black without any appearance of banding. The beak is horn-coloured at the tip and bluish at the base; the irides: the cere and naked cheeks of a dull red; the legs yellow, and the claws black. Such at least are the colours of the living specimen in the Society's garden. Several changes, however, take place in the plumage of the bird as it grows older, and there are other forms, in which it appears, from the specimen in the Society's Museum, to be one of the distinct marks of the young bird. Cuvier, in the last edition of the *Regnum Animalium*, observes that the *Falco cheronius* of Jaquin may be nothing but a variety of age. Mr. Bennett consequently unable to trace the history of the true Caracara beyond the year 1774, when a figure and description were published at Vienna by the younger Jaquin, from his father's papers, under the name of *Falco cheronius*.

These Mr. Bennett has no hesitation in referring to the present species. The principal differences between them consist in the markings of the head and neck, which in the figure are more longitudinal than transverse, and in the very awkward foreshortening of the beak, which completely distorts its natural form. The former appears, from the specimens in the Society's Museum, to be one of the distinct marks of the young bird. Bennett, in the last edition of the *Regnum Animalium*, observes that the *Falco cheronius* of Jaquin may be nothing but a variety of age. Mr. Bennett then notices the very complete description of the adult Caracara in D'Arcy. According to this author, the full-grown bird measures 21½ feet in length in the expanse of the wings. Its colours agree with the description above given, excepting that the first six quills-feathers of the wings are white, marked with rays and spots of brown, and become blackish towards the point; the back is transversely marked with brown and white, the latter predominating on its upper half, and *vives corollis*: the fore part of the neck and breast are traversed by dusky lines mixed with a greater proportion of white; the cere is of an orange hue, and the throat and sides of the head are almost white. This description of Mr. Bennett coincides with that of M. Cuvier, taken from specimens in the Paris Museum, and with the figure of one of these specimens given by M. Vieillot in his *Galerie des Oiseaux*. And Mr. Bennett then refers to the figure given by M. Spix in his *Birds of Brazil*, as the young of this species, which resembles M. Vieillot's in form, except that the legs are longer and thicker, and the tips of the wings reach to the extremity of the tail. In colour it is rather of a darker brown, approaching more nearly to the Society's specimen alluded to by Mr. Bennett; the breast is light brown instead of
of white; and the transverse waves of the breast and shoulders are replaced by longitudinal brown dashes upon a light ground. The cere and naked cheeks are in both of a bright yellow; indeed Mr. Bennett states that he has nowhere met with them of the same hue with those of the Society's living specimen, except in the figure and description of Jacquin.

Habits, Food, Reproduction. The Caracara is said to live either alone or in pairs. But D'Azara states that he has seen them join in companies of four or five to hunt down prey which a single caracara would find a difficulty in mastering, such as red buzzards, herons, and other large birds, and it is believed that they will often destroy the American ostrich, young fawns, and lambs, when so associated. In its food it seems to be content with any animal substance. Carrion (for if a caracara see a vulture devour a piece of flesh, he is said to pursue him and compel him to disgorge it), toads, frogs, worms, snails, lizards, grubs, grasshoppers, winged ants, snakes, and flies—bird in short the general prey of buzzards, hawks, falcons, and insectivorous birds—all suit its appetite. Two of the specimens obtained by M. Spix were shot in the act of extracting insects from the hides of oxen. D'Azara will not allow that the caracara preys on the smaller birds, because, he says, that it is unable to catch them; but Prince Maximilian found in the stomachs of those which he opened the remains of small birds and insects, especially grasshoppers, which abound in its haunt. It is by no means shy, and advances like the vultures to inhabited places, perching on trees and house-tops and not caring to conceal itself. It is seldom attacked, for it rarely molests domestic poultry, but it is stated that it will sometimes carry off the sportsman's game. The nest, according to D'Azara, is built on the tops of trees, especially those round which the climbing plants are most luxuriant, or in a bushy thicket. It is large, and composed of sticks and twining branches laid nearly flat, and lined, inartificially, thickly with hairs. The eggs, which are laid in August, September, or October, are two in number, pointed at one end, and dotted and blotched with crimson on a brownish-red ground.

abundant in the south and east of Brazil (Prince of New-wied); Spix's specimens were from the northern provinces; less numerous on the Rio de la Plata than in Paraguay, where it is almost equal in number to all the other birds of prey put together (D'Azara); Sirsuits of Magalhaens (Capt. Philip Parker King, R.N.).

N.B.—There are now (1837) two fine specimens in the garden of the Zoological Society in the Regent's Park.

Mr. Bennett's provisional species Polyborus (?) (hyppoleucos) was founded on the Angola Vulture of Pennant. Vultur Angolensis of Gmelin, in an immature state of plumage.

Dr. Smith proposed the genus Polyborodes on the Falco Gymnognys of Temminck in the South African Journal, in April, 1830, and M. Lesson, in the November of that year, separated the same form under the generic title Gymnognys.

From Hyetor and Polyborus Mr. Vigors passes to the Fishing Eagles, and particularizes as the first

Pandion (Savigny).


Example, Pandion Haliaetus.
its hill, he adds, is more compressed than that of Pandion, its acrorasias are scutellated, and the 4th quill feather, as in Halieetus, is the longest. It thus stands, in the opinion of Mr. Vigors, oscilant between the two groups. For the description and natural history of Pandion Halieetus see Bath, vol. iii. p. 316.

The last group of the Fishing Eagles, according to Mr. Vigors, is comprised in the genus Halieetus (Savigny).

The genus Halieetus is much larger in Europe than in America. It includes several species which, though similar in form and structure, differ considerably in coloration.

The head and neck of the male Halieetus are of a bluish-grey, while the female has a more ashy-grey coloration. The upper parts of the body are white, with a greenish tint on the back and wings. The tail is brownish-black, with a white tip. The bill is long and curved, and the feet are powerful.

The species of Halieetus are distinguished by their size, coloration, and distribution. The most common species in Europe is the Fish Eagle, Halieetus albicilla, which is found throughout the Continent. The Fish Eagle is about 3 feet in length, with a wingspan of 6 feet. It is a powerful bird of prey, with a strong beak and sharp talons. It feeds on fish, birds, and small mammals, and is often seen fishing from a perch or a rock.

It is interesting to note that the Fish Eagle has been the subject of many studies and observations, and its behavior and ecology have been well documented. The bird is known to be a solitary hunter, and its hunting behavior is often observed in the wild. The Fish Eagle is also known for its impressive aerial displays, which are sometimes referred to as "flying shows." These displays are a unique feature of the bird, and are often used to attract mates.

In conclusion, the Fish Eagle is a remarkable bird, with several distinguishing features that set it apart from other birds of prey. Its size, coloration, and distribution make it a fascinating bird to study, and its behavior and ecology continue to be the subject of much research.

For more information on the Fish Eagle, and other birds of prey, please refer to the works of authorities in the field. Their descriptions and observations provide valuable insights into the life and habits of this remarkable bird.
Eagle had not been chosen as the representative of our country. He is a bird of bad moral character; he does not get his living honestly. You may have seen him perched on some dead tree, where, too lazy to fish for himself, he watches the labours of the fishing-hawk; and when that diligent hunter has taken a fish, he, in true bravado, flies up to that of his mate and young ones, the Bald Eagle pursues him and takes it from him. With all this injustice, he is never in good ease, but, like those among men who live by sharping and robbing, he is generally poor, and often very losy. Besides, he is a rank coward: the little King-Bird, not bigger than a sparrow, attacks him boldly, and drives him out of the district. He is therefore by no means a proper emblem for the brave and honest Cincinnati of America, who have driven all the King Birds from their city. In fact, it is the first of that order of birds which the French call Chevaliers d'Industrie."

With regard to the Reproduction, M. Audubon says that incubation commences in the beginning of January. He shot a female on the 17th of that month, as she sat on her eggs, in which the chick had made great progress. The nest, he says that author, 'which in some instances is of great size, is usually placed on a very tall tree, destitute of branches to a considerable height, but by no means always a dead one. It is never seen on rocks. It is composed of sticks from three to five feet in length, large pieces of turf, rank weeds, and Spanish moss in abundance, whatever that substance happens to be near. When finished, it measures from five to six feet in diameter, and so great is the accumulation of materials, that it sometimes measures the same in depth, it being occupied for a great number of years in succession, and receiving some augmentation each season. When placed in a naked tree, between the forks of the branches, it is conspicuously seen at a great distance. The eggs, which are from two to four, more commonly two or three, are of a dull white colour, and equally rounded at both ends, some of them being occasionally granulated. Incubation lasts for more than three weeks, but I have not been able to ascertain its precise duration, as I have observed the female on different occasions sat for a few days in the nest before laying the first egg. Of this I assured myself by climbing to the nest every day in succession, during her temporary absence.' (Ornithological Biography, vol. I.)

Locality.—In every part of the United States of America, seldom appearing, according to Audubon, in very mountainous districts, but preferring the low lands of the sea-shores, those of the larger lakes, and the borders of rivers. Mr. Bennett remarks, that the White-headed Eagle is usually spoken of as inhabiting the northern parts both of this country and new continent; but that it is very rare and occasional visitor of the former. It is probable, he adds, that some of the varieties of the Common Sea-Eagle of this quarter of the globe have been frequently mistaken for it, and remarks, that throughout nearly the whole of North America, on the European continent, where the true species seems to be unknown, it is met with in great abundance. Dr. Richardson says that it is the earliest of the summer visitors to the fur countries, and the period of its arrival has given the name of Meekeshen expediens, or Eagle Moon, to the month of March. 'Temmik,' says Dr. Richardson (Pallas Boreali-Americani), 'assigns for its habitual residence the regions within the Arctic Circle; and Wilson observes, that it is found at all seasons in the countries it inhabits. Both these assertions however require, I apprehend, to be taken with considerable latitude. We did not, on the late expeditions, meet with it to the north of the Great Slave Lake (62° N. lat.), although it is common in the summer, in the country extending from thence to Lake Superior, and its breeding-places in the latter district are numerous. But in the month of October, when the rivers from which it draws its principal supply of food are frozen over, it entirely quits the Hudson's Bay lands; and if, after that period, it is to be seen in the northern regions, it can only be on the sea-coast, and for a limited time, while the sea continues unfrozen. It is known to breed as far south as Virginia, but its nests do not appear to be so common within any part of the United States as they are in the fur countries.' The bird is not mentioned in the Supplement to Captain (now Sir W. E.) Parry's First Voyage, nor in that to Captain (now Sir John) Ross's Last Voyage.

This bird is the Meekeshen (name for the species), Wa-putiquan-Meekeeshen (White-headed Eagle—mature bird), A. J. Meekeshen (Black-headed Eagle—immature bird), and Meekeeshenbush (Yearling bird) of the Cree Indians.

Colonel Sykes notes among the birds of Dukhan (Desert) Holictetus Ponticerianus, Falco Ponicerianus of Latham, Brunnny Kite of the Europeans in India. The Colonel says that it is seen constantly passing up and down rivers at a considerable height, but prepared to fall at an instant on its prey. Usually it soars while on the wing, but occasionally dips directly under water, appearing to rise again with difficulty. It is quite a mistake, he adds, to suppose it feeds on carrion. On the examination of the stomachs and carcases of many specimens, the contents were found to be fish, and fish only, excepting on one occasion, when a crab was met with. (Reel Proc. April, 1834.)

There is a beautiful specimen of Holictetus Aquia, Chilian Sea-eagle, now (1837) in the gardens of the Zoological Society, in the Regent's Park; and there is a specimen of Holictetus vocifer, the Fishing Eagle of the Cape colonists, in the South African Museum, now (1837) exhibiting in the Egyptian Hall, Piccadilly. The last bird is only met with in the neighbourhood of the sea, or upon the banks of large rivers. See the interesting Catalogue, where it is also stated that Aquila varitunorius, also in the Museum, records exclusively to high rugged mountains, where it perches upon the Hyace Capensis—ino Dassie of the Cape colonists. Dr. Smith (Zool. Proc. April, 1833) had previously stated that Aquila Verruxis of Lesson is synonymous with Aquila varitunorius, which had recently been described by M. Lesson off a Holictetus, but that it has however none of the habits of the Fishing Eagles, inhabiting the highest and most rocky mountains, proying principally upon the animal mentioned in the Catalogue. In the 'Proceedings' it is added that the error probably arose from the white buck being concealed, in stuffed specimens, by the wings.

Leaving the Fishing Eagles, Mr. Vigors proceeds to Circeetus. (Vieillot.)

Benn convex above. Nostrils lunulate, transverse. Cere sublittis. Pars elongated, naked. Acratopsia re-
ticated. Toes short, the external toe connected with the middle one at the base. Claws short, subequal. This genus is founded upon the well known Jean le Blanc of the European continent, Falco brachydactylus of Wolff, Falco Gallicus of Gmelin, Aquiletto of the Italians. Here, Mr. Vigors observes, we find the exterior toe united to the middle by a short membrane, which is the case indeed in the greater portion of the family, while in the two latter genera the toes are all divided to the origin.

Description.—Circeetus brachydactylus is, according to Temminck, the Falco brachydactylus of Wolff; Aquila brachydactyla of Meyer; Falco Gallicus of Gmelin; Falco leucopsts of Bohstein; Aquila leucampsona, Borkh. Deul. Orn.; Le Jean le Blanc of Buffon and the French generally; Aigle Jean le Blanc of Temminck; Falco Terzo of Aquila, Sior. deg. Urc.; and Kurzzehiger-Adler of Meyer.

Old Male.—Habit very large; below the eyes a space clothed with white down; summit of the head, cheeks, throat, breast, and belly, white, but variegated with a few spots of bright brown; back and covert of the wings brown, but the origin of all the feathers of a pure white; tail square, gray-brown, barred with deeper brown, white below; tarsi long and grayish-blue, as are the toes; bill black; cere bluish; iris yellow; length, two feet.

Female.—Less white than the male. The head, the neck, the breast, and the belly, are marked with numerous brown spots, which are very much approximated.

Young.—Upper parts darker, but the origin of the feathers pure white; throat, breast, and belly, of a red-brown, little or not at all spotted with white; bands on the tail nearly imperceptible; bill bluish; feet grayish-white.

Food and Reproduction.—Lizards and serpents, to which it gives the preference; rarely birds and domestic poultry. The nest is built on the highest trees, and the eggs are two or three in number, of a lustrous grey, and spotless.

miuck.) Prince Bonaparte notes it as rather rare near Rome. Colonel Sykes notes it among the birds of the Dukhun (Deccan).

Dr. Smith's Circetus pectoralis, which undergoes many changes of plumage before it arrives at maturity (see South African Museum and Catalogue), is stated (Zool. Proc. April, 1833) to be synonymous with Circ. thoracicus of Cuvier.

Mr. Vigors next proceeds to the true

Aquila (of Authors).

Beak subangular above. Nostriis rounded. Cere subhispid. Tarsi plumed to the toes.

Leg and foot of Golden Eagle.

Mr. Vigors observes that the predominant mark of distinction in this genus is the tarsi being feathered to the toes. The culmen of the bill appears also to differ from that of the other eagles in being more angular. The species Aquila heliaca of Savigny, Falco chrysaetus, and Falco nercus of Linneus, Falco bellicosus of Daudin, with some others lately made known to us, belong to the group which contains the most powerful birds of the family.

Example, Aquila chrysaetus, the Golden Eagle, Adler of the Germans, Erzg Meiyg of the anciant Britis.
In all tail-breeds inhabits the plains, Wings feathered and tarsi south Century cere parts inside Extreme Aquila eons, Falco niger of Gmelin; Falco tullus and Falco Caudivus of Gmelin; Falco chrysopterus of Linnaeus; L'Aigle Royal of Buffon; Le Grand Aigle, Gerard, Tab. Emblem; L'Aigle d'Or, Bory de Méneville; Rapp, Golden Eagle of Latham; and Aquila Realis or Color leontis and Aquila Rapace, Stor. deg. Ucc.

Young birds of one and two years. (Ring-tail Eagle.) All the plumage of a ferruginous or clear reddish-brown, uniform on all parts of the body; lower tail-coverts white, the inside of the thighs and feathers of the tarsus of a pure white; tail quite white from the base to three-fourths of its length, but afterwards brown to the end; internal bands of the quills and of the caudal feathers pure white; this same, more rare in India and Switzerland, and all the feathers of their body. In proportion as the young bird advances in age the colours of the plumage become brown, the white of the tail occupies less space, and traces of the transverse bars appear. In the third year the plumage is white or Varicoloured—Partially or totally white. (Falco albicollis of Gmelin; Falco rufus of Latham; L'Aigle Blanc of Beson.)

Food and Reproduction.—The Golden Eagle preys on hares, fawns, and often on birds. Extreme hunger will drive it to prey on carcasses.

Locality.—The great forests in plains, and in a less degree those in the mountains of the north of Europe; very common in Sweden, in Scotland, in the Tyrol, France, and Switzerland; more rare in Italy and Switzerland, yet very common in France, in the forest of Fontainebleau, in the mountains of Auvergne, and on the Pyrenees; rare in Holland; less common in the Oriental countries than the preceding species, i.e. Aquila helveta of Saviaggi, Aquila imperialis of Temminck (Temminck). According to Wilson, the Golden Eagle inhabits America, and occurs from the temperate to the arctic regions, particularly in the latter, where it breeds on precipitous rocks, always preferring a mountainous country. Dr. Richardson (Fauna Boreali-Americana of Gmelin), considers the eagle as very numerous in the mountains, and as seldom seen farther to the eastward. 'It always Mr. Richardson, held by the aborigines of America, as it is by almost every other people, to be an emblem of majesty, prosperity, and victory; as a heago plume as the most honourable ornament with which he can adorn himself. Its feathers are attached to the calumets, or smoking pipes, used by the Indians in the celebration of their solemn festivals, which has obtained for it the name of the Calumet Eagle. Indeed, so high are these ornaments prized, that a warrior will often exchange a valuable horse for the tail feathers of a single eagle.' It is the Koo of the Cree Indians. Dr. Richardson observes that the mature British Golden Eagle is chiefly blackish-brown, shaded with brownish-black, and a paler and brighter-brown head. He had not seen an American one in this state, but we do not think that any reason for a doubt. Many other authors mention the eagle and ring-tails in such terms as to make the identity of the bird almost unquestionable; and though Dr. Richardson says that it is seldom seen farther to the eastward than the Rocky Mountains, Mr. Audubon relates that he saw a Golden Eagle on the coast of Labrador, besides others in various parts of the United States. The Golden Eagle, and the other birds of prey, is said to occur in Northern Africa and Asia Minor. Mr. Yarrell, in his Interesting History of British Birds, now in the course of publication, thus sums up its localities in our islands. 'The Golden Eagle, though chiefly found in districts of the Highlands and Reserves of the northern counties of England, is more exclusively confined to Scotland, and its western and northern islands. Some years ago a specimen was killed at Blair, in Sussex: it has also occurred, but very rarely, in Suffolk, Norfolk, Derbyshire, Durham, and Northumberland. Mr. Mudie, in his Feathered Tribes of the British Islands, has named 'the higher gleans of the rivers that rise on the south-east of the Grampians, the high cliff called Wallace's Craig, on the south-side of Lorne and Craig Muskeldie on its south side, as localities for the Golden Eagle. Mr. Selby and his party of naturalists observed this species in Sutherlandshire in the summer of 1834. Mr. Macquillanwry, in his detailed descriptions of the rapacious birds of India, tells us that the Indian Eagle, being the only species of this in the Hebrides; and other observers have seen it in the Orkney and Shetland Islands, where it is said constantly to rear its young. In a direction west of London the Golden Eagle has been obtained or seen on the coasts of the Baltic, and on the south and east sides of the Russian peninsula. The Ring-tailed Eagle (the young of the Golden) was seen by a party of naturalists in Connamara in the autumn of 1835, and from William Thompson, Esq., vice-president of the Natural History Society of Belfast, to whom I am indebted for a catalogue and notes of the birds of Ireland, which will be constantly referred to throughout the work, I learn that specimens of the Golden Eagle are preserved in Belfast which were obtained in the counties of Donegal and Antrim. The age of the eagle is almost proverbial. One was said to be 104 years old. Colonel Sykes notes the Golden Eagle among the birds of the Dukhun (Deccan). His specimen differed so slightly from the European bird as not to justify its separation. (Zool. Proc., April, 1833.) In the catalogue of birds collected on the Ganges between Calcutta and Benares, and in the Vindhyian hills between the latter place and Gurrah Mundela, on the Nerbudda, by Major James Franklin, F.R.S., &c., we find recorded an eagle, Aquila Frondt, with a query whether it is the Caspian Eagle of Latham (Zool. Proc., August, 1831), and among the Dukhun birds, Aquila biseteciata of Hardwick and Gray. (Ind. Zool.) A whole rat was found in the stomach of one bird. A second was of the dead carcass of a young Indian tiger, but it had not fed, for the stomach was empty. Dr. Smith stated (Zool. Proc., 1833) that the eagle from the Cape presented to the Society by the Hon. J. T. Leslie Melville, and in the Society's menagerie, was not the young of Aquila culturina (Daudum), but of Aquila Chaga (Smith), or Aquila rapax (Temminck). Specimens of Aquilas bellicosus and rapax are in the South African Museum, as well as of A. culturina. The first is only found in wooded districts, prey on small quadrupeds, and has been known to swoop upon and catch man, but cannot harm his nest. A. rapax, though it principally preys on living creatures, does not wholly reject carrion, being frequently one of the first birds that approaches a dead animal. (See Catalogue of South African Museum.) Mr. Keith Abbott of Zoolog. Proc., June, 1833, reports a note among the Trehibon birds Aquila pennata, inhabiting Eastern Europe and the adjacent parts of Asia and Africa.

Hematornis. (Vigors.)

Mr. Vigors, at a meeting of the Zoological Society (December, 1831), characterized among the species comprising the 'Century of Birds from the Himalaya Mountains,' drawn and lithographed by Mr. and Mrs. Gould, the above-named genus, which Mr. Vigors considered as exhibiting a striking diversity of form among the Eagles.

Generic Character.—Beak rather strong, sufficiently elongated; upper mandible straight at the base, very much curved at the apex; nostrils oval, placed obliquely in the bill; wings long; tail variable, the second and third longer, the fourth and fifth nearly equal and longest, the rest gradually decreasing. Feet rather weak, subelongated; tarsi rough, reticulated with scales; toes rather short, reticulated with scales on the inner side. Tail sufficiently long, rounded. (Vigors.)

This group was observed to bear a near affinity to the genus Pandion in the shape of the bill, wings, and the ruffe reticulated scales of the tarsi, but to differ from it in the comparative length and wasp-like form of the bill, the tail, and the nails grooved underneath, and not convex as in the latter group. To this genus belongs the Falco Bala (Latham) of Africa, and the Manilla bird then lately described in the Proceedings (page 96), under the name of Buto holospilus. These, from the ep
parent weakness of their limbs, had hitherto generally been ranked among the buzzards; although from the description of the courageous habits of the Balsa Falcon, the only one well known of the group, doubts had been expressed of the propriety of ranking them with that tribe. Mr. Vigors suggested the subfamily of Eagles as a more appropriate station for them; where, united by many important characters to Pandion, they apparently led off by the length of their tarsi to the genus Linnaeus ("Memoirs of Sir S. Raffles," Appendix, p. 648) and others of the long-legged Eagles. The three species of the group were exhibited, their general similarity in colour and markings pointed out, and their specific differences explained. These consist chiefly in size, Haemat. holospilus being one-third smaller than H. Buda; while H. undulatus (which is 2 feet 7 inches in length) considerably exceeds the latter. The first is spotted all over the body, the second only on the abdomen, while the third is marked by spots on the wing-coverts, and by ocelli bearing an undulated appearance upon the abdomen, the breast also being crossed by undulating fascies. - A specimen of H. undulatus was afterwards (January, 1832) exhibited from Mr. Hodgson's Nepaul collection. It agreed nearly with that which had been previously exhibited, except in size; the present specimen being about one-third longer. From this difference in size it was conjectured to be a female. Colonel Sykes identified a specimen shot in the Dukhu (Decon) with Heman-tornis Buda. (Zool. Proc.)

Description of H. undulatus (male and female probably).-Black and wings intense brown; head crested, the feathers white at the base, of a dark brown, nearly approaching to black at the end, the hind ones being margined with a light rufous band at the apex. The wing-coverts near the carpal joint deep brown, marked with small white spots; quill-feathers fuscous, darker at the apex, and marked with white towards the base of the interior web; the cere base of the beak, and legs yellow; claws black. (Vigors, in Gould's 'Century of Birds from the Himalaya Mountains.')

_Haematopus undulatus_, from the work above quoted, by permission.

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Short-winged Eagles.

_Harpia, (Cuvier.)_

_Bus_, above, convex. _Upper mandible_ slightly toothed. _Nostrils_ semi-lunar, transverse. _Tarsi_ elongated, very strong, feathered at the base. _Acreditornis_ scutellated. _Claws_ long, very strong, acute.

Mr. Vigors, in placing Harpia next to Aquila, observes that the former equals the latter in size and powers of body. In _tarsi_, he remarks, are strong, thick, partly plumaged, with scutellated acrotinia. The cere are elongated, apparently semi-lunar, and placed transversely on the cere. The upper mandible, he adds, seems to have a notch somewhat analogous to that of the true Falcons. The type is Falco imperialis of Shaw.

This powerful bird is the Grande Harpie d'Amérique at the French, _Aquila coronata_ of the Spanish, Falcon, _Harpia d'Amérique_ of Audubon, _Aigle destructeur_ of Bonnini, _Grand Aigle de la Gendarmerie de M. de Cassine_ of Cuvier. Mr. Vigors states with truth that much confusion has arisen as to the synonyms of this bird, and even as to the characters of the genus. Mr. Bennett has, in our opinion, well cleared this confusion away, and we therefore select his synonymy.

'M. Temminck,' says the last-mentioned zoologist (Gardens and Menagerie of the Zoological Society delineated, vol. ii.), 'the latest writer on this magnificent bird, positively denies the identity with the Falco harpyia of Linnaeus and the crowned Harpy of Audubon. The Harpy of Jacquin, on the singular ground that those names indicate a smaller bird with longer and more slender legs. Now Linnaeus, who borrowed his original description of the harpy from Harneiss, asserts, on the authority of that writer, that it is equal in size to a common American eagle, and Jacquin states his bird to have measured full two feet and a half in height in its natural sitting posture, and almost two inches in the diameter of its legs. It is impossible to read the descriptions of Harneiss and Jacquin, making in every case the former some little allowance of the confusion, without feeling a conviction that they both refer to the bird now under consideration. That of the latter author in particular is admirably characteristic. Linnaeus originally founded his species on the indication given by Harneiss, and the exact designation of his 'Sonsini' and the confusion between it and a bird seen by a friend, probably a popel, in the Royal Menagerie at Marseilles, which there is every reason to believe, from the description given, to have been just. If we only in the twelfth edition of his important work that he introduced a slight confusion by adding to the citation from Harneiss, to the account furnished by his friend, and to some particulars extracted from Jacquin's then unpublished description of his supposed species, a synonym from Marmagrei, which can alone justify M. Temminck's criticism. We restore without hesitation both these synonyms of Linnaeus and Jacquin, excluding only from the twelfth edition of the Systema Naturae the references to Marmagrei and his copies. With the Falco harpyia of Linnaeus and the Falco imperialis of Cuvier are necessarily included among the synonyms of the harpy eagle the Falco harpyia and the Falco Jacquinii of Gmelin, by whom the trivial name assigned to Jacquin's to his bird was changed on account of its introduction into a genus in which an application was previously. In the year 1834, Mr. Dillen published, in the Menagerie of Daudin Real at Madrid, a species of eagle, which he imagined to be an undescribed kind not taken notice of by Linnaeus. This bird, which he figures in his Travels through Spain under the name _Falco crested_ Fris, is evidently of the same species with the harpy, although the representation is rudely executed, and in some respects, as for example the length of the beak, grossly caricatured. We might almost be tempted to suspect that the specimen seen by him was identical with that described by Linnaeus from the harpy eagle twenty years before, were it not, that the latter bird is expressly called Mornex, while that of Mr. Dillen is stated to have come from the Caracas. For this reason Dr. Latham introduced it into his Synopsis under the name of the Caracas Falcon.

*Gmelin, quoting from Latham, soon after latinized its former name into Falco cristatus, and this may therefore be added to the synonyms of our bird, of which Mr. Dillen's was the first published figure. The next original description of the Harpy Eagle was that of Dillen, who regarded his specimens as nondescript, and gave them the name of Grand Aigle de la Guiane, from the country whence they were obtained. To these birds, which formed part of the collection of the Paris Museum, Daudin, in his terminological paper published in 1800, applied the name _Falco appellatus_ Falco destructor; and the names given by these two writers have been generally adopted on the continent of Europe as the only ones certainly applicable to the species. M. Bonnini seems doubtful whether or not to regard the two specimens described by him as distinct species, and names the one _Aigle destructor_, and the
other Grand Aigle de la Guiané; but there seems no sufficient reason for their separation. Dr. Shaw's Falco imperialis was founded on the two birds of a remarkable similarity to the Peruvian, of which he has given a figure, and which bears a strong resemblance to the Crested Eagle of Stedman's 'Expedition to Surinam,' spoken of as a very strong and fierce bird, belongs to the same species. Figures of the harpy are likewise given by M. Cuvier in his 'Regne Animal,' by M. Vieillot, in his 'Nouvelles Descriptions des Oiseaux,' and by M. Temminck, in his 'Planches Colorées.' Those of the two last-named works are strikingly characteristic. That of the 'Dictionnaire' exhibits the crest-feathers equally and stiffly elevated round the back part of the middle line of the head, and thus forming a round of a dull black, with the exception of a slight margin of grey on the tips of the longer feathers, and a more extensive tinge of the same colour on those of the sides. This crest is slightly raised above the level of the feathers of the back of the head when the bird is quiet, but is capable of being elevated at right angles with them upon any sudden excitement. In this state, to an observer placed in front of the bird, the middle feathers of the crest are rarely visible, on account of their being inserted much lower down than the lateral ones; while the latter, converging on either side, form, as it were, two vast ear-like processes. Below the crest, the whole of the back and wings, together with a broad collar round the front part of the neck black, each of the feathers of the back terminating in a narrow transverse somewhat lighter streak. Under surface, from the breast backwards, pure white; plumage of the legs white with blackish transverse bars. Tail with four transverse black bands, of about equal breadth with the four alternating violetish or ash-coloured spaces; the tip light ash. (Bennett.)

Immature bird.—Upper parts motled with brown grey and whitish; cheeks, occiput, throat, and under parts light grey, with a few black feathers in front of the neck, and some large irregular black spots on each side of the lower edge of the tail-feathers on a light ash-coloured ground. (Falco imperialis, Shaw); (Vieillot, young female?...). Back and wings greyish fawn-colour, irregularly marbled and spotted with black; collar ash-fawn, more or less spotted with black; bars crossing the legs fewer and narrower; all the lower parts whitish-fawn sprinkled with darker spots; upper surface of tail ash-coloured, with small blackish spots; patches of black mark the places of the future bands which gradually increase at each change; under surface white, deepened with fawn. (Bird further advanced.) Collar, crest, back, and wing-coverts almost uniformly grey; quill-feathers of the wings black; under surface of body dirty white; each of the tail-feathers marked beneath by four large black patches crossing its shaft and extending about half its width. Upper mandible very thick at the base, straight for some distance, and suddenly curving downwards with a strong arch towards the sharp point; lower mandible straight, short and blunt; nostrils transverse and oval; wings when closed not reaching beyond the middle of the back, which is rounded at the extremity; legs feathered on the upper part of their anterior surface only, the rest naked and reticulated; talons extremely strong, internal and posterior ones very long. Mr. Bennett observes that in some of these characters, as for instance the nakedness of the legs, the harpy approaches the sea-eagles; but it differs from them in many essential points, and in none more remarkably than in the shortness of its wings, and the robustness of its legs and talons; the former character rendering it, like the short-winged hawks, more adapted for preying near the surface of the ground on gallinaceous birds and quadrupeds, and the latter enabling it to carry off a prey of much greater magnitude.

Habits.—The harpy is stated to be a solitary bird, frequenting the thickest forests, where it feeds upon the sloths: it also preys on fawns and other young quadrupeds. Sonnini observed it sitting motionless and uttering no cry, on a high tree on the banks of the Orapu. Hernandez does not seem inclined to detract from the powers of the bird, for he says that it will attack the most fierce beasts, and even men himself; and he further states that it may be trained like a hawk to pursue game. Linnaeus gives the bird credit for strength sufficient to split a man's skull with a single blow (unica ietu). These accounts of its prowess must be taken with some grains of allowance, but that the bird is very powerful is without doubt. Jacquin's specimen was found dead in the ship that was conveying it to Europe, and its death was with some probability attributed to the sailors, whose monkeys the eagle had destroyed. When these animals gambolled too near its cage they were seized by its talons and devoured with almost all their bones, but not their skin, which the bird invariably stripped off. The harpy which was obtained by Mr. Hekethmay in the neighborhood of the river Magdalena, in New Granada (Jaquin); Caracas (Madrid specimen); Guiana (Sonnini)

Harpia Destructa
Morphnus (Cuvier.)

*Beak convex above; nostrils elliptical; tarsi elevated, rather slender; acrotarsia scutellated; toes rather short; claw acute.*

Mr. Vigors observes, that this genus differs from Harpia in its more slender, lengthened, and scutellated tarsi, and the comparative weakness of its toes. It is separated into two sections, as the tarsi are plumed or otherwise; among the former M. Cuvier arranges Falcoce occipitalis, ornatus, and afferes of Daudin, and Falco maculosa of Vieillot; among the latter, Falco Guianensis of Daudin, and Falco Urubitinga of Gmelin. *Spizaetus* of Vieillot corresponds with this group.

- **Tarsi naked.**

Example, *Morphnus Urubitinga, Falco Urubitinga of Gmelin, Aquila Brasilis of Brisson, Brazilian Eagle of Latham, Urubitinga of Maregrate, Willughby, Ray, and others. The following is Willughby's description.—This bird is like an eagle of the bigness of a goose of six months old. It hath a thick hooked black beak; a yellowish skin (cere) about the nostrils; great sparkling aquiline eyes; a great head; yellow legs and feet; four toes in each foot, disposed after the usual manner; crooked, long, black talons; large wings; a broad tail. It is all over covered with dusky and blackish feathers; yet the wings are waved with ash-colour. The tail is nine inches long, white for six, the end for three inches being black; howbeit in the very tip there is again a little white.*

- **Young of the year.**—Blackish yellow below; the centre of each feather marked with blackish brown tear-like spots; throat and cheeks with brown stripe on a whitish ground. Locality, Brazil and Guiana, where it is said to seek its prey on inundated places.

- **Morphnus (Cuvier.)**

*Beak convex above; nostrils nearly closed, round; tarsi short, semipalmated.*

Distinguished by their short, half-plumed, and scutellated tarsi, and more particularly by their nostril being nearly closed, and bearing the appearance of a narrow slit or channel.

- **Acrotarsia scutellated.**

Example.—*Cymindis hamatus, Falco hamatus of Illiger.*

*Beak convex above; nostrils nearly closed, round; tarsi short, semipalmated.*

Distinguished by their short, half-plumed, and scutellated tarsi, and more particularly by their nostril being nearly closed, and bearing the appearance of a narrow slit or channel.

- **Morphnus.**

*Beak convex above; nostrils elliptical; tarsi elevated, rather slender; acrotarsia scutellated; toes rather short; claw acute.*

Example.—*Morphnus occipitalis, Falco occipitalis of Daudin, L'Aigle-aoutour noir huppé d'Afrique, and Huppert.*

*Description.—Size of a crow; black, with a long crest or tuft dependant from the occiput; tarsi, edge of the wing, and bands on the tail, whitish. Locality, Africa.*
Asturina (Vielliot).

Head and foot of Asturina cayennensis.

Asturina (Vielliot).

Beak convex above; nostril lunulate; karf short, somewhat slender; claw long, very acute.

Description.—Bluish ash-colour; whistling bands on the under part of the body; tail traversed by two black stripes, blue at the point; beak blue below; cere blue; feet yellow. Locality, Guiana.

Mr. Vigors observes, that it is among these short-winged Eagles that the greatest difficulty prevails in deciding on their immediate affinities. Being for the most part extra-European, and not within the reach of general examination, their characters are also being but little noted, and the chapters on which we depend for forming our decision respecting their affinities being for the most part passed over in the descriptions given of them, it is only by conjecture that we can assign them a place in the general arrangement of their order. Of this nature, he remarks, is the genus last described. The same difficulty, he adds, extends to several other described species of the Falconidae, which appear to belong to the group of short-winged Eagles, although they have been assigned a different locality by the authors who have described them. Among these is the Falco Bocka of Daudin, which has been generally ranked with the Buzzard. Its short wings and lengthened bill, however, seem, according to Mr. Vigors, to bring it among the present group of the Eagles; and its habits, as described by Dr. Horsfield, who had an opportunity of studying them in the Island of Java, where the birds are by no means uncommon, do not in any respect correspond with the Buzzard tribe. Mr. Vigors would have placed it with Falco albigula of Cuvier, near those species of the genus Asturina which are distinguished by P. C. No. 617.

Acrotarisa reticulata.

Example, Cymindis Cayennensis, Falco Cayennensis of Gmelin, Petit autour de Cayenne.

Description.—Summit of the head ash-coloured; back (postmas) brown, barred with deeper brown; belly white; tail grey, barred with white beneath; feet ash-coloured. Locality, Cayenne.

... Acrotarisa reticulata, if not in that genus itself. He has, indeed, some doubts whether most of the short-winged Falconidae at present placed among the Buzzards, such as F. bosun and F. tachiro of Daudin, F. pavonina of Cuvier, &c., may not be more properly removed to a situation between the short-winged Eagles and the Hawks, with both of which they seem to have a considerable affinity. There is, continues Mr. Vigors, another group which also appears allied to the present, distinguished by a rather feebly and elongated bill, short wings, and slender, lengthened tarsi, feathered to the toes. It includes F. kimmaeae of Horsfield (Zool. Res., No. 6, Pl. Col. 134), F. nicus of Temminck (Pl. Col. 127), and F. atricapillus of Cuvier (Pl. Col. 79). These appear to be strongly allied, in the opinion of Mr. Vigors, if not to appertain, to the foregoing mentioned genus Morphnus. F. tyrannus of Prince Maximilian (Pl. Col. 73) bears also. Mr. Vigors thinks, a strong similitude to the same group, though partially differing in external characters.

2. Sub-family Accipitrina (Hawks).

Beak short, hooked from the base; wings short, fourth quill longest.

' The short wings of the last groups,' writes Mr. Vigors, 'lead us to the present division of Hawks, all of which, a considerably extensive tribe, are characterized by their wings extending no further than two-thirds of the extent of their tail. The fourth quill-feather is the longest, first, second, and third, gradually exceeding each other in length. In this division we may observe that the upper mandible, though not furnished with distinct teeth like the true Falcons, has the festoon or prominence that generally supplies its place more strong and angular than is usual among these tribes. In some of the Accipitres this is particularly distinguishable. The sub-family we have just quitted includes all the birds of the present family in which the beak is straight at the base, and hooked only at the apex. We now enter upon the first of those groups where the bill is curved from the base, a character that extends through the remainder of the Falconidae. It may be observed, that this character, which thus separates the family into two departments, was equally noticed as a mark of distinction between the species known to the ancients. Pliny, apparently referring to it as a line of demarcation between them, divides the group into his two departments of Aquila and Accipitres. It is from adopting the same views respecting
the family, that M. Brisson instituted his two leading divisions, to which he assigned corresponding denominations.'

Dedalion (Savigny).

Beak short; nostriis suboval; tarsi moderate; acrotaursia reticulated; type F. cucimens of Linnaeus, and F. melanops of Latham.

Mr. Vigors adopts the name which was conferred by M. Savigny on the whole of the sub-family, for the present division of it.

Example, Dedalion melanops.

Description.—(Adult male) white, flamed with black on the neck and breast; back, wings, and tail, deep black, the last with a white stripe, and terminated with white; there are dots of the same colour on the coverts of the wings; cere and tarsi reddish. Locality, Guiana. The form may be illustrated by the over the lore, eyes, cheeks and ear-coverts; the neck of the neck, throat, breast, belly, and thighs, nearly white, with spots, transverse bars, and undulating lines of dull black; under tail-coverts white; lore, cheeks, and ear-coverts, greyish-brown, forming an elongated dark patch on the side of the head; the legs and toes yellow; the claws black.

Young birds have the beak, cere, and eyes, nearly similar to those of the old birds; the top of the head, nape, and ear-coverts, ferruginous white, each feather darker in the middle; back, wings, and upper tail-coverts, brown, the tips being grey; under surface of the tail-feathers with five bands of dark-brown and four bands of lighter brown, the ends of all the feathers white; wing-primaries dark-brown, barred with two shades of brown on the inner webs; the chin, throat, breast, and belly, greyish-white, each feather with a faint elongated patch of dark-brown and white on the side, which is not continued to the base of the feather; the whole under tail-coverts of a dark-brown longitudinal streak instead of a brown patch; under surface of the wing, greyish-white, with transverse dusky bars; under surface of the tail-feathers greyish-white, with five dark brown transverse bars, the tips of all the feathers white; legs and toes yellow-brown; the claws black; those of the inner toe considerably larger than those of the outer.

(Yarrell.)

Habits, Food, Reproduction.—Flies low and pursues its prey in a line after it, or in the manner called 'raking' by falconers. If the game takes refuge it will sit patiently on a tree or stone till it moves, or till some other prey is accessible. Food, hares, rabbits, pigeons, phasians, geese, and partridges. The female was generally seen by falconers at far, and the male at feeter, but the female was also trained to take the larger winged game, the male being principally flown at partridges. Turberville says, 'you shall not need to shew any other game to a goshawk for he will sooner fly a partridge, because in learing to see the partridge they prove most excellent; and the first yeare you shall doe best to fieo them to the field, not to the covert, for so will they learn to hold out (not to turne tayle) in the midst of their flight; and when they be mewed hawkes, you may take them to do what you will; and understand you, that shall not neede to take such paine, nor to use such art in making a goshawke which is taken a brancher as with a Nyzare, for she will always know of her selfe what to doe.' (The Book of Falconrie.) Nest, on a high tree in the outskirts of the forest; rarely found in the interior, except in those parts which are open and free from timber. Eggs three or four, frequently hatched in the middle of May. (Hewitson, ex-relatione Hoy.) Mr. Yarrell says that the eggs are round, and that the scale on which he has seen them was uniform in size and colour, 2½ inches in length by 1½ inch in breadth, of a pale bluish-white, without any spots or streaks.

Locality.—Denmark, Norway, Sweden, Siberia, Ross, and Chiloe, Facetary. (Müller, Linnaeus, Pernant, de Montfort, Bonaparte.) It is common in France, Germany, Russia and Switzerland: more rare in Holland. (Temminck.) Rare in the south of England. Mr. Yarrell says 'the fowl that are used for hawking are obtained from the continent. Colonel Thomson, who kept them customarily in Yorkshire, procured some of his specimens from Scotland. Dr. Moore, in his catalogue of the birds of Devonshire, says: that it is found occasionally at Dartmoor, but I cannot find no record of its appearance farther west in England, nor any notice of it in Ireland. A fine adult male was procured by my keeper in Suffolk in March, 1833; and Mr. Doubleday of Epping, has sent me word that he received a young bird from Norfolk in the spring of the same year. Mr. Selby mentions that he had never seen a recent specimen sent from that place, but it is not certain that he saw were Peregrine Falcons.'—The more so, as several recent visitors to these northern islands have observed peregrines but no goshawks.' (British Birds.) Prince Bonaparte has noted the goshawk as not common in the vicinity of Rome, Naples, and Genoa. Dr. Richardson (Vesica Boreali-Americana) describes one shot in company with the female at the nest on the plains of the Saskatchewan, and states that another specimen was
Sparrow-hawk, the lapwing, the Dutch, and the young feathers of this species, which is the Ash-coloured or Black-capped Hawk of Wilson.

Colonel Sykes describes an Astur (A. hydron) among his birds of the Dukhun (Deccan), and there are specimens of A. maculatus and A. melanoleucus in the South African Museum.

**Falco palumbarius.**

Aceripiter (of Ray, Brisson, and authors).

Sparrow-hawk. *Nostrils* suboval, *Tarsi* elongated, smooth. *Aquila* subelliptical, the stature scarcely to be discerned. Tete, the Common Sparrow-hawk. *Aceripiter fringillarius* of Ray: to which, says Mr. Vigors, may be added many corresponding species which do not seem to have any limits to their geographical distribution.

**Description.** The Sparrow-hawk is L'Epeiser of the French; *Falco palumbino* and *Sparviere da fringualti* of the Italians; *Die sperber* of the Germans; *Sparviero* of the Fama Suecica; *Falco Nius* of Lineanus; and *Giedopia* of the ancien British.

**Adult Male.** About twelve inches in length; *beak* blue, lightest at the base; *cere* greenish-yellow, the *irides* yellow; *top of the head*, nape of the neck, *back*, *wings*, and *wing-covers* rich dark-brown—in very old males with a tinge of yellowish; *tail-feathers* greyish-brown, with three conspicuous transverse bands of dark-brown; *chin*, *cheeks*, *throat*, *breast*, *belly*, *thighs*, and **under tail-coverts**, rufous, with numerous transverse bars of darker russet brown; *legs and toes* long, slender, and yellow; *claws* curved, sharp, and black.

**Female.**—Generally three inches longer than the male; *beak* blue horn-colour; *cere* yellowish, the *irides* yellow; *top of the head*, upper part of the neck, *back*, *wings*, and *tail-coverts* brown—the base of many of the feathers white, which, extending beyond the edge of the feather immediately above it, causes a white spot or mark; *primaries* and *tail-feathers* light-brown, barred transversely with dark brown; *under surface of the neck, body*, *wing-coverts*, and *thighs* greyish-white, barred transversely with brown; *under surface of the wing* and *tail-feathers* of the same colour, but the light and dark bars much broader; the first six *wing-primaries* emarginated; the fourth and fifth *tail-feathers* equal and the longest, the first *tail-feather* the shortest; *legs and toes* yellow; *claws* long, curved, sharp, and black.

**Young Male.**—Resembles the female; but the brown feathers of the *back* and *wing-coverts* are edged with reddish-brown; feathers of the *tail* reddish-brown, particularly toward the base, with three conspicuous dark-brown transverse bands. In other particulars like the female: both have a collar formed by a mixture of white and brown, which extends from the sides of the neck to the nape. (Yarrell.)

**Habits, Food, Reproduction.** Haunts, wooded districts. The great enemy of small quadrupeds and birds, and often very destructive to young chicks in poultry-yards in the breeding season. Used in falconry; the best of all hawks for landrails. (Selby.)

**Locality.**—Spread throughout Europe, Japan (Temminck), Smyrna (Mr. Strickland), Denmark, Sweden, Norway, Russia, and from thence southward over the European continent to Spain and Italy. Common in most of the counties of England, and has been observed in the west and north of Ireland; occurs also in Scotland and its northern islands. (Yarrell.) Very common, migratory, near Rome. (Bonaparte.)

The form is widely spread. Col. Sykes records Aciperites Dukhuni (resembling *A. fringillarius*, but differing in certain points), and *Dusuneri* among the birds of the Dukhun (Deccan). In the South African Museum will be found *Aceripiter* polyzonus, *polyzonoides*, *niger*, *Garbar*, *Teather*, *minimus*, and *pygmeus*.

Mr. Vigors remarks that there are some species which seem to be allied to this sub-family and to be intermediate between it and the succeeding sub-family of Falcons, which, from some peculiarities of character, cannot well be appended.
to any established genus. They possess, he observes, a shortness of wing which would incline us to refer them to some of the present groups; but their upper mandible, strongly and doubly dentated, presents a character that will not admit of their being included in any of the foregoing genera, in which the mandibles are entire, or where the place of the tooth is supplied by a rounded prominence. These species Mr. Vigors would have wished to arrange in one genus; but they are found to differ in essential points which bring them respectively within the pale of the two conterminous sub-families now under consideration; and he feels obliged, for the sake of perspicuity, to adopt the following genera of which the type is Falco bidulcatus of Latranch.

Harpagus. (Vigors. Bidulca* of Spix.)


Mr. Vigors observes that the essential characteristic of this group is the double tooth on both the upper and lower mandible. The wings, which correspond with those of the other Hauke, in being one-third shorter than the tail, have the third and fourth quill feathers, which are the longest, of equal length. The tarsi are of moderate length and strength, and have the acrotarsi scutellated as in the latter groups of the present sub-family. The acrotarsi are of a semicircular form and the cen is naked.

Example, Harpagus bidulcatus. Locality, Brazil, and Guiana.

Description.—Length, a foot and some lines (French). Slate-colour above; throat white; breast and belly red, undulated with yellowish; lower coverts of the tail white; tail nearly equal, brownish, barred with white.

Mr. Vigors remarks that Falco Divodan of Temmuck is to be referred to this genus.  

Gampsogonyx. (Vigors.)

Beak short, mandibles entire. Nostrils rounded. Wings short, second quill longest, third generally equal to the second, and internal web of the first and second strongly notched near the apex. Tarsi moderate, equal. Feet moderate; tarsi reticulated, acrotarsi feathered below the knee to the middle. (Vigors.)

The genus is founded on a small and beautiful Beak, 1 writes Mr. Vigors in The Zoological Journal, vol. ii., which has been kindly submitted to my inspection by Mr. Swainson, one of the fruits of that gentleman’s extensive researches in Brazil. This bird decidedly belongs to the Acritirinae sub-family of the Falconidae; but it is placed at that remote extremity of it, where the species, gradually approaching the Falcons, partially assume some of their leading characters. It possesses the bill of the Hawks, and also the shortness of wing which strongly characterizes them: but the structure of the wing itself is the same as in Falco, the second quill-feather being the longest, and the first and second of these feathers being marked on the inner web by an abrupt emanation near the apex; while the tarsi also display the character of the same genus in having the acrotarsi reticulated. The bird thus exhibits a striking modification of form, at once partaking of the chief of the respective characters of both the Hawks and Falcons; with the former of which it may in addition be

observed that it agrees in its general form, and with some of the latter, particularly the beautiful group of Isrur pennant, in its colours, and in the general distribution of them. To the latter group indeed it has a striking resemblance, and might perhaps be referred unconditionally; but could we pass over the important character of the unshaped bill.

Description of Gampsogonyx Swainsoni. Above emerald-black, white beneath; front, cheeks, sides of the abdomen, and femoral feathers orange; a black spot on each side of the breast.

Beak black. Feathers of the back and secondaries ash-black, spotted with ferruginous. Lower side and tail color white, sprinkled with orange. Primaries blackish, internally margined with white at the apex; secondaries, sparingly sprinkled with ferruginous, beneath white. Tail-feathers ash-black, internally (the tail excepted) margined with white, beneath white. Fore-yellow, violets black. Length of the body 10 inches. (Vigors.)

Locality, Brazil. Mr. Vigors says that the following MS. note was appended to this bird in Mr. Swainson’s handwriting: — The only individual of this species I ever met with was shot on the Table Land, about 10 leagues in the interior of Bahia, in a direction west-southwest from the bay of St. Salvador. It was perched on the trunk of a withered tree, apparently watching some small birds. The tarsi are bright and the irises hazel.

3rd. Sub-family, Falconina (Falcons).

Beak short, hooked from the base. Wings long. Second quill longest. (Vigors.)

Mr. Vigors observes that this, closely allied to Harpagus by the double tooth on its upper mandible, is another group for which he proposes the name of

Tras. 3 (Vigors.)


Mr. Vigors observes that the term Bidulca is appropriated to Balasny, and Lebdiol a Linnaean genus.

1 For the description of Mr. Swainson’s genus Acridra, the reader is referred to the interesting work on the birds of Western Africa by that prominent Naturalist’s Library, vol. viii. p. 104. Acrotarsi scutellate, Cuckoo Falco.

3 Tiern, reg. 

* For the description of Mr. Swainson’s genus Acridra, the reader is referred to the interesting work on the birds of Western Africa by that prominent Naturalist’s Library, vol. viii. p. 104. Acrotarsi scutellate, Cuckoo Falco.
It but I prefer placing it in its present situation on account of the length of the second quill-feather, a peculiarity which distinguishes the true Falcons, and gives a striking character to their flight. Placed, however, at the extremity of the division, it preserves its affinity with those that went before.

Description.—Hierax coculescens is, according to Dr. Horsfield, the Atop, or Atar-allop of the Javanese; Falco coculescens of Linnaeus; P. Eccentricus of Brissou; Falco porus Indicus Ger. Orn.; Little black and orange Indian hue of Edwards; and the Bengal Falcon of Latham. It is a bird of both high and low altitude. The male is 9 inches and a half, and the female is 8 inches. The female has a more slender build; the male has a more robust form.

Falc. (Zool. Proc. 1831) describes another species, Hierax erythrogerus, the size of H. coculescens, from the neighbourhood of Manilla.

Falco. Best short. Upper mandible strongly toothed; lower notched. Acrotarsia reticulata. Second quill longest; first and third being nearly equal. The genus, which includes, as Mr. Vigors observes, the greater portion of the present sub-family, comprises the typical species. The upper mandible of this group, observes a zoologist, is armed with a strong angular tooth; the lower is notched near the point. The naries are rounded. The wings are for the most part as long as the tail, the second quill-feathers being invariably the longest. The first and second quill-feathers are also distinguished by an abrupt emargination on the inner web near the extremity. In some species, as in F. peregrinus, the emargination of the second quill-feather is not so abrupt as in others. In all the species of the true Falco that have come under my examination, this emargination of the first quill-feather at least is strongly apparent. The bars are moderate in length and strength, and have the acrotarsia reticulata. Our European species, F. peregrinus. Linn., F. rusticae, Linn., F. rufus, Linn., F. rufus, Duval., are readily distinguished as belonging to this typical genus. Some eagles being often found with bars shorter than the tail, which, in conjunction with Jerar, thus evince a general series of affinity between the short and long-winged tribes. Among these we may distinguish F. luminosa, Linn., F. ruficola, Duval., with some corresponding species. For example, Falco peregrinus.

Description.—The Peregrine Falcon is Le Faucon peléris of the French; Sparrowie pellegrino and Falco realis of the Italians; Wander Falke of the Germans; Apesto-haco (Little Eagle) of the Cree Indians; Hevog tamor and Communic of the ancient Hindoos.

Adult.—Length from 15 to 18 inches, depending on the sex and age of the bird. Drak blue, approaching to black at the point; cere and eyelids yellow, irides dark hazel-brown; top of the head, back of the neck, ard a spot below the eye nearly black; back and upper surface bluish-slate or ash colour, becoming lighter at every succeeding moult; the males usually the most so; feathers of back, wing-coverts, and tail barred with a darker tint; primaries brownish black, inner webs barred and spotted with rufous white; front of body, with dark longitudinal lines; breast rufous white, with dark-brown streaks; thighs, under tail-coverts, and under surface of the tail-feathers barred transversely with dark-brown and greyish-white; legs and toes yellow, claus black.

Young.—Head—Heads of body and wing-coverts brownish ash, the edge of each feather rufous; the dark longitudinal streaks on the white under-side of the body more conspicuous, but, gradually shortening and spreading laterally, they ultimately change their direction, and become transverse. The change is first observable on the belly and flanks. (Yarrell.)

Temminck considers the Lanner (Lanner) of Buffon the perfect state of the male Peregrine. He also adds Falco Barbarus of Latham as one of its synonyms.

Habits. Hogset, Falcon. The food of the Peregrine consists of land and water-fowl, rabbits, young hares, &c. It was highly prized in falconry. Turbervile, in his chapter on the Haggart Falcon, and why she is called the Peregrine or Haggart, gives the following reasons for the name: "First, because her flight is the swiftest. Second, because she seeth not what she seeketh, nor findeth where she seeketh: this is by nature in a man, Christian or Heathen, find their erry in any region; so as it may well be thought, that for that occasion they have archived and gotten that name and term of Peregrine or Haggart. Third, because she doth seek so many strange and foreign places, and doth range so far abroad. The third and last cause, I do think, may be their beauty and excellency, because this word (Peregrine), or Peregrino, doth many times import a beautiful and excellent thing. Wherefore I conclude that these Haggart Falcons are not of Italy, but transported and brought thither from foreign places, as, namely, from Alexandria, Cyprus, and Candia. And yet this is for certain, that in Italy there are taken of these Haggart Falcons, to the number of the renowned duke of Ferrara and in the country near Ravenna, being brought thither by force of weather and wind. And by that means there are none of those Haggarts found Eysseses, but they are at either some Hawks or mewed Hawks."

In the language of falconry," writes Yarrell, "the female Peregrine is exclusively called the Falcon, and on account of her greater size, power, and courage, is usually flown at herons and ducks; the male Peregrine, being smaller, sometimes one-third less than the female, is called the Tercel, Tiereel, and Tiercelet, and is more frequently flown at partridges, and sometimes at magpies. Young Peregrines of the year, on account of the red tinge of their plumage, are called, the female a red falcon, and the male a red tiercel, to distinguish them from older birds, which are called Haggards or intermewed Hawks. The Lanner of Pennant is a young female Peregrine, at which age it bears some resemblance to the true Lanner, Falco laniarius Buff., which is armed with a strong angular tooth, and is a species of the Peregrine, and which probably has never been killed in this country. Mr. Gould says he was unable to find a specimen in any collection here, either public or private, at the time he was desirous of figuring this species in his book on Europe. The Lanner of Linn., according to him, is that Linien of the French, the name of which he would give to any account of the mode of flying it at herons, &c., flying at the brook or at the river, as it was antiently called; and we must refer the reader to Turbervile, among...
the old writers, and to Sir John Sebright as the best of the modern authors on the subject. (See Sir John's Observations on Falcons.) Near are a number of large rocks. In Britain, Mr. Yarrell states that the Peregrine builds on various parts of the coast, more frequently in Scotland than in England. The eggs are from two to four in number, about two inches long by one inch and eight lines in breadth, mottled all over with pale reddish brown. Mr. Salty notices a curious variation at St. Abb's Head. It was from this locality that the late Mr. Baird of Newbuth usually obtained his east of Hawks, for each of which he gave the persons who undertook the peril of climbing the rock one guinea. Other localities for the nest in Britain are the cliffs between Freshwater, Gate and the light-house near the Needles, Devonshire and Cornwall, where it is called Cliff Hawk. Holyhead and the Great Orme's Head. (Yarrell.) Rocky coast of Caernarvonshire. (Pennant.) Rocky situations inland and marine in Ireland. (Thompson quoted by Yarrell.) Vale of Moffat in Dumfriesshire, the Bass Rock, and the isle of May, in the Forth. (Sir Wm. Jardine.)

Locality.—All the mountainous countries of Europe, particularly on rocks; very rare in champaign countries; never found in marshy districts; abundant in Germany and France; sufficiently common in England and Holland; rare in Switzerland. (Temminck.) Shetland Isles, where it breeds; Denmark, Sweden, Norway, Lapland, and Green-land. (Yarrell.) Uralian and Siberian mountains. (Pennant.) Dr. Richardson, who describes an old male from Melville Peninsula, int. 65° N., says (Fauna Boreali-Americana), 'The Peregrine being a rare bird in the wooded districts of the fur countries where the trading posts are established, I did not expect to procure a specimen on the late expeditions; but I have frequently seen it whilst on the march across the Barren Grounds. Of the two specimens figured by Edwards, one was from Hudson's Bay and the other was caught off the entrance of Hudson's Straits. Captain Parry likewise brought home several male and female specimens from Melville Peninsula, some of which are preserved in the British Museum. It is a summer visitor of the northern parts of America, and frequents the coasts of Hudson's Bay and the Arctic Sea, with the Barren Grounds, but is very seldom seen in the interior. It breeds on the long-tailed ducks (anas glauciaca), which breed in great numbers in the Arctic regions, arriving in June and departing in September. Captain Parry observed it, in his return voyage, following flocks of the same species, near Cape Farewell. It frequents the shores of New Jersey and Pennsylvania in the winter, and is celebrated there for the havoc it makes among the water-fowl. Mr. Ord states that the ducks which are stricken by them are lacerated from the neck to the tail by the bill in a blow in which they raise it with their wings from the water and blow in the air, it upwards its bird.' Port Famine, straits of Magalasins. (Captain King.) New Holland. (Vigors and Horsfield.) Cape of Good Hope. (Dr. A. Smith.) Prince Bonaparte notes it as rare, and as seen only in winter near Rome, and as having disappeared near Philadelphia. (South African Museum, No. 94.) says that the bird so numbered, though it does not exhibit exactly the plumage of the Peregrine Hawk of Europe, yet approaches it so closely, that it might be considered as attempting too great a refinement to clas it as a different species.' (South African Museum, No. 94.)

Mr. Vigors observes that Cuvier has subdivided the Falco Islandicus of Latham from the rest of the true Falco, under the generic title of Hierofalco, which he characterizes as possessing no tooth on the upper mandible, a broad prominent beak, and blue speculum. It breeds in the isles of the Arctic Ocean, in which the wings considerably fall short of the tail in length. In this opinion Mr. Vigors does not acquiesce. He cites examples of the Jerfalcon in its different stages of growth, and in none did he perceive any material difference between its bill and that of the true Falco. He adds that he feels much hesitation in advancing the above opinion, not merely on account of the known accuracy of Cuvier, but on account of some facts that had then lately come to his knowledge. He mentions specimens in the Museum, in which the mandible accords exactly with Cuvier's description—"il n'a qu'un feston comme celui des ignobles." In several specimens from the arctic regions, however, in the same collection, he found the tooth. After referring to the views of Mr. Vigors, he observes, 'I inquired whether it may not be possible that there are two species. He cannot think that the character itself is variable, or that Cuvier would have adopted one which must have been known to him as such, even from the place. 'In no specimen of a true falcon,' says Mr. Vigors, 'have I seen the slightest alteration of the tooth, except by accident.'

Our limits will not permit us to do more than hint at the other species of Falco. P. chiquera, Himalayan Mountains; F. chiquera, Corea; F. cf. micropterus, Siberia; F. micropterus, Java; F. micropterus, the Malay Archipelago; F. ophiomelas, the Kestrel, inhabits Asia from the S. of Africa, as well as Europe, and is very abundant in the Dakhan (Degen.) (Sykes, Abbott.)

4th. Sub-family, Butrovina (Buzzards).

Beak short, hooked, from the base. Tail equal.

The sub-family of the Buzzards agrees, in the opinion of Mr. Vigors, with the last in the length of the wings, and the bill being bent from the base, and differs from it by a weaker and somewhat more elongated bill, by the third and fourth teeth being elongated, and the absence of a tooth on the upper mandible. A gradation seems, however, as Mr. Vigors observes, to soften down these differences, and there is an approximation to the beak of the falcons in the first genus of the sub-family.

Ictinia (Vieillot).


Mr. Vigors states that this genus is founded upon the Milan Cressorell of M. Vieillot, and has a short and strong bill, the upper mandible of which is somewhat angularly festooned, and the under distinctly notched. The most prominent note of Falco, the. Falco, P. chiquera, is that the beak is smooth and feathered below the knees, and the acrotarsus scutellated. The wings are of considerable length, extending far beyond the tail; a character which induced M. Vieillot and others to place the bird near the Kites. Its strong adhesion to the last sub-family, of which it possesses so many of the characteristics, inclines Mr. Vigors to assign it its present situation. In manners, he adds, it seems also to approach the falcons; and he remarks that if we consider the Mississippi Kite of Wilson to belong to the present group of the sub-family, it appears that we must attribute to the bird before us, judging from the interesting description in the American Ornithology, much of these
spired and generous qualities which we admire in the
group of the family.

Example, *Haliaeetus amurensis* (Falco plumbeus of Latham.)
Description.—Black and wings slate-blue; head and belly
which, spotted with brown. Iris fine red.

Habits.—Said to fly to a great height, where it remains a
long time poised or stationary, and eaves the air with
ready to seize the giant insects which are its prey.
Locality, Siberia, China, and North American.

Eggs of the Buzzard, according to the Zoological
Society of London, are about five inches in length.

The Buzzard is a bird of prey, and is to be found in
most parts of Europe, Asia, and Africa. It is
not uncommon in England, and is often seen in
the fields and woods, especially in the autumn and
winter months. It is a large bird, with a wingspan of
over five feet. The Buzzard is known for its keen
sight and its ability to hover in the air, waiting for
a meal to come its way. Its diet consists of small
mammals, reptiles, and birds.

The Buzzard is a migratory bird, and is seen in
England during the summer months, but is absent
from the region during the winter months. It is
seen in the fields and woods, especially during the
autumn and winter months. It is known for its
keen sight and its ability to hover in the air, waiting
for a meal to come its way. Its diet consists of small
mammals, reptiles, and birds.
184.) In the South African Museum will be found Cerci ramiportus (with habits very much resembling those of our Buteo buzzard, Murus, Scirrornis, and Le Vaillantii. In the British Museum there is a very good series of the Buteo buzzard, illustrating the different changes of plumage.

Pernis. (Cuvier.)


Mr. Vagor observes that Pernis is distinguished by the singular character of the beak, that surrounds the eye, being covered with feathers, instead of being naked as in the other Falconides, or furnished only with hairs. In other respects also, he states, the genus differs from that of Buteo with which Pernis appears to be naturalized, and, like Circus, it has the third quill the longest. The more similar to those of Buteo. Palco ayrius of Linnaeus, the Honey buzzard, and a corresponding species from Java, F. philobourchus of Temminck, form, he adds, the typical species in the genus. Example, Peris ayrius.

Description.—The Honey buzzard is La Boudrice and Buteo Boudrie of the French; Wessan-Buzzard of the Germans; Froesch-geyerl of Kramer; Stag-hok of the Fanna Species; Mite-Hoeg and Muse-Bouge of Brunnich; and Buzzard of the ancient British.

Old males.—Space between the eye and the beak covered with small serrated feathers. Top of the head very pale ash-blue; upper parts of the body brown, more or less ashy; secondaries, barred alternately with blackish blue and greyish, with three broad bands of blackish brown at unequal distances; throat yellowish white with brown spots; neck and belly marked with triangular brown spots on a whitish ground; cere deep ash; interior of beak, iris and feet yellow. Length about two feet.

Female and young.—Ashy-blue on the forehead only; front of the neck marked with great spots of bright brown; breast and belly yellowish brown with deeper spots; under surface of the body often whitish with reddish brown spots.

Young of the Year.—Cere yellow; iris bright brown; head spotted with white and brown; under paimeth, part of the body reddish white with great brown spots; feathers of the upper parts bordered with reddish. (Temminck.)

Habits.—Food—Reproduction. The Honey buzzard feeds chiefly on moles, mice, lizards, birds, reptiles, wasps and other insects. (Temminck.) * Examinations, says Mr. Yarrell in his British Birds, 'have usually proved the food to have been the larvae of bees and wasps, to obtain which the receptacles containing them are scratched out and broken up in the manner described by Sir William Jardine.* In one instance, in the case of a Honey buzzard kept in confinement, I was told that it killed and ate rats, as well as birds of considerable size, with great care and good appetite. The same author records that the stomach of a specimen killed in the north of Ireland and examined by Mr. Thompson of Belfast, contained a few of the larvae and some fragments of perfect coleopterous insects; several whitish coloured hairy caterpillars; the pupae of a species of butterflies, and also of the six-spot hornet moth. Wil- lughby says, *In the stomach and guts of the Buzzard, that we dissected we found a huge number of green caterpillars of that sort called Geometrae, many also of the common green caterpillars and others.' White's specimen had in its stomach limbs of frogs, and many grey snails without shells. Wil- lughby says that it was very small and like a hen. Yarrell states that it seldom flies, except from one tree to another, or from bush to bush, and then always low, and that it runs on the ground with great rapidity like the common fowls.

Head and feet of Pernis ayrius.

Nest on a lofty tree in a wood or forest. While mentions one on a tall slender tree, the branch of which was closely hupe by Hanger. Willughby says, *It builds its nest of small twigs, laying upon them wool, and upon the wool its eggs. We saw one that made use of an old kite's nest to breed in, and felt its fleas with the synophe of wasps; for in the nest we found the cocoons of wasps' nests, and in the stools of the young the limbs and fragments of Wasps' nests. There were in the nest only two young ones, covered with white down spotted with black. Their feet were of a pale yellow, their beak between the nostrils and the head white. Their claws long, and armed with a short sharp point, a Lizard's, Frog's &c. &c. In the crop of one of them we found two Lizards entirely with their heads lying towards the bird's mouth, as if they sought to creep out.' The same author says that the eggs are cinereous, marked with darker spots. The eye mentioned by White was smaller and not so round as those of the common Buzzard, dotted at each end with small red spots, and surrounded in the middle with a broad blood-red zone. Pennant mentions two black patches over with two shades of red, somewhat darker than those of the Buteo. As the eggs of the Honey Buzzard, writes Mr. Yarrell, 'are rare.' I have only seen three or four specimens, one of whose wasps' nests, and of which the eggs illustrated by White, the colouring matter being confined to a broad band round the middle. One specimen in my collection resembles those mentioned by Pennant, being mortally nearly all over with two shades of orange brown: long diameter 2 inches; transverse diameter 1 inch; breadth 9 lines.

Locality. Oriental countries; very rare or accidental in Holland; more abundant in France in the Vosges and in the south, a bird of passage (Temminck). Denmark, Norway, Sweden, Russia, Germany, France, Italy and the south of Europe generally (Yarrell and authors in his quoted). Skins received from India (Gould). In Britain the bird has been obtained in Suffolk, Norfolk, and along the eastern coast as far north as Northumberland, and in several western counties, including Dorsetshire, Devonshire, and Worcestershire. Rare in Cumberland, according to Dr. Hey-sham, who had only met with one specimen, and was told that it bred in the woods at Losther. Mr. Thompson mentions one killed in the North of Ireland by Mr. Maegillhony two years as having occurred in South Buffon and others. Below among the rest, say that it gets very fat in winter and is then good eating.
The whole length of the Common Buzzard is from three to five feet. The general plumage of the Buzzard is of the Falconid species, generally, being the largest. From the habit of seeking food late in the evening, observed in this species, and also in the Rough-legged Buzzard, and in the softer and more downy texture of the feathers, as compared with the species in the true Falcons, the Buzzards are considered as indicating an approach to the Owls. The beak is bluish black, darkest in colour towards the point; the cere yellow, the irides generally yellow; but, as the Common Buzzard and indeed all the Buzzards are subject to considerable variation in the color of their plumage, the irides are observed to vary also, presenting some reference to the prevailing tone of the colour of the feathers. The upper part of the head, occiput, and cheeks, pale brown, streaked longitudinally with darker brown; the whole of the back, wings, coverts, and thighs, a bluish grey, barred transversely with dark brown; and grey and yellow; the clasps black. (Yarrell.)


Food.—The Reproduction of the Buzzard is slow, and it generally remains perched on some tree in the wooded districts patiently waiting for its prey, viz., small quadrupeds, birds, and reptiles, and even earth-worms and insects. It may be seen sometimes soaring in circles, but often, and does not pursue it if it is not near the nest, at it when on the ground. Its nature is slow and cowardly, but its philoprogenitiveness appears to be great. The cock buzzard will hatch and bring up the young if the hen is killed (Ray), and, among other instances, Mr. Yarrell records one of a female buzzard kept in the garden of the Chequers Inn, at Uxbridge, which showing an inclination a few years back to make a nest and sit, was supplied with materials and two hen's eggs, which hatched and afterwards reared the chicks. Since that time she has hatched and brought up a brood of chickens every year. Once they put down chicks just hatched to her to save her the labour of sitting, but she killed them all. Her family, says Mr. Yarrell, in June, 1831, consisted of nine; the original number were ten, but one had been lost. When flesh was given her she was very eternally offering it as food for her nurseries, and appeared uneasy if, after taking small portions from her, they turned away to pick up grass. (British Birds; where there is an elegant vignette of the bird and her foster family.) Indeed the young remain with the hen for some time after they quit the nest, contrary to the usage of other birds of prey, which generally drive away their young as soon as they can fly. Nest.—In Scotland, where the bird is said to be bolder, on rocks or on the edges of steep scarp or beds of torrents. (Morgi-livy.) In England, the buzzard builds (or sometimes takes to a nest) in the fork of a tree in a wood. The eggs are generally three, sometimes four, short oval, two inches three lines in length by one inch ten lines in breadth, of a soiled white, slightly spotted with pale brown. (Yarrell.)

Common in all the wooded countries of Europe; very abundant in Holland. (Temminck.) It is well-known, says Mr. Yarrell, over the wooded parts of the Continent of Europe, south of Russia, and inhabits Spain and Italy, passing over the Mediterranean to North Africa; but Trebizond, Smyrna, and Madeira appear to be its limits to the southward. Prince Bonaparte notes it as very common near Rome. In several parts of Ireland it is common (Thompson); not very plentiful in Scotland, nor does it appear in the lists of the birds of Orkney and Shetland, by the Mr. Low and Mr. Dunn, though it occurs in Denmark, Norway, Sweden, and Russia. Mr. Gould, in noticing the Trebizond birds presented to the Zool. Soc. by Mr. Keith Abbott, among which it was, observes that it was not previously observed in Asia, although there is a nearly identical species in the Himalayan mountains, and that it had not been noticed in Africa. (Zool. Proc. 1834.)

In England, though lately more rare, it is still far from uncommon.

P. C., No. 618.

Dr. Richardson (Fauna Boreali-Americana) states that the Common Buzzard arrives in the fur countries in the middle of April, very soon afterwards begins to build its nest, and, having reared its young, departs about the end of September. It hunts the low bird's-plains of land which stretch out under the higher banks of a river, and may be observed for a long time motionless on the bough of a tree watching for some small quadruped, bird, or reptile to pass within its reach. As soon as it espies its prey, it glides silently into the air, and, swooping easily but rapidly down, seizes it in its claws. When disturbed, it makes a short circuit, and soon settles on another perch. One of Dr. Richardson's specimens had two middle-sized toads in its crop. It builds its nest, according to the Doctor, on a tree, of short sticks, lining it with dew's hair. The eggs are, he says, from three to five in number, and he remarks that it was seen by the expedition as far north as the 57th parallel, and that it most probably has a still higher range. He gives a description of two; one a male, shot on the 17th June, at the nest, which contained three eggs, one from plains of the Saskatchewan; and another, a female, killed at the nest also, near Carlton, May 22.

Falco Bala is recorded by Major James Franklin among the collection formed by him on the banks of the Ganges and in the mountain-chain of Upper Hindostan. In the South African Museum the Buteonides Jackal and Tachardus are preserved. The former is stated to be rare, its plumage as from a cry somewhat similar to that of the small quadrupeds called Jackals at the Cape. It abounds throughout South Africa. (See the Catalogue.) In the same collection will be found Butasttes Lessori.

7th Sub-family. Milvina. (Kites.)

Beak moderate, rather hooked from the base. Tail forked. The length of the wings and the forked tail, instruments of action in which the birds are gifted for their peculiar power and gracefulness of flight, are the characters which more particularly separate the Kites from the rest of the Raptures.

Ealanus. (Savigny.)

Beak moderate, weak, compressed, Tarsi short, semi-plumose. Claws, with the exception of the middle one, rounded internally. Second quill longest. First and second quills strongly notched internally.

Example, Ealanus melanopterus. Black-winged Swallow-Hawk.

Description.—This is the Falco melanopterus of Daubin; E. ceyxius of Savigny; and Le Biah de Vaillant. Size of a Sparrow-Hawk. Plumage soft and silky, tail a little forked. Above ash-coloured, quills blackish, brow and

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shudder black. Reden white. Tail principally white. Feet yellow.

Habitats. — The bird is said to live principally upon insects which it captures on the wing.

Locality. — Common in Africa from Egypt to the Cape. There is a species in the South African Museum. Steventon speaks of it as being in great abundance in Syria, Egypt, and Barbary. Crabbe Tucker's expedition saw great numbers at the mouth of the Congo, and some were sent home from thence. Lesson says that it occurs in New Holland. It is noticed among the birds collected by Major James Franklin on the banks of the Congo, and in the mountain chain of Upper Haidas.

Nandus hirsutus. (Vigors.)

Book rather short, weak, compressed. Notisina sub-oval, placed in the creo, which is furnished with bristles in an oblique direction. Wings long; second or third quill longest. Tail long, very much forked. Feet short, weak. Terra notieiated. Jerrisina feathered below the knee to the middle. Ovum not cylindrical. Body slender, elegant.

Mr. Vigors observes that Nandus is distinguished from the true Mihrus by the greater development of the character of the forked tail; by the relative proportion of the wing-feathers, the fourth being the longest in Mihrus; and by the re-orientation of the nandusina, those of Mihrus being covered with even scales or veined. He divides the genus into two sections.

1st. With the second quill longest.

Example, Nandus rosarius.

2nd.

Example, Nandus furcaria. Eden furcaria, Linn. Swallow-tailed Hawk.

Description. — Whole length 20 inches. Peak dusky-black, cera lighter blue, trider dark; head, neck, breast, belly, under surface of the wings, sides of the body, thighs, and under tail-coverts, pure white; back, wing primaries, secondaries, upper tail-coverts and tail-feathers black, with a purple metallic lustre; tertials black on the outer webs, but paunched with pure white on the inner; tail very deeply forked; legs and two greenish blue; ovens faded orange. (Yarrell.)

Habit. — Food: — Reproduction: — Locality. — We erect Mr. Audubon's account of the habits and locality of this graceful bird: A solitary individual of this species has once or twice been seen in Pennsylvania. Farther to the eastward the Swallow-tailed Hawk has never, I believe, been observed. Travelling southward along the Atlantic coast, we find it in Virginia, although in very small numbers. Beyond that state it becomes more abundant. Near the falls of the Ohio a pair had a nest, and reared four young ones in 1829. In the lower parts of Kentucky it begins to become more numerous; but in the states farther to the south, and particularly in parts near the sea, it is abundant. In the

large prairies of the Attacapas and Opelousa it is extremely common. In the states of Louisiana and Mississippi, where these birds are abundant, they arrive in large companies in the beginning of April, and are heard among a sharp plaintive note. At this period I frequently remarked that they came from the westward, and have counted upwards of a hundred in the space of an hour, passing me in a direct easterly course. At that season and in the beginning of September, when they are returning to the United States, they are easily approached when they have alighted, being then apparently fatigued, and boldly engaged in preparing themselves for continuing their journey, by dressing and other their feathers. At all other times, however, it is extremely difficult to get near them, as they generally run away through the day, and at night rest on the higher pines and expresses, barking the mouth, the likes, or the swamps of that kind of country. The always feed on the way. In calm and warm weather the noise of their nervous breath, purring the large insert-caly Merganser Hawks, and performing the most singular motions that can be conceived, using their tail with an elegance of motion peculiar to themselves. Their principal food however is large grass-roots, grasshoppers, small snakes, lizards, and frogs. They sweep close over the field, sometimes seeming to alight for a moment to search a nest, and holding it fast by the neck, carry it off and descend in the air. When someplace for grass-hoppers and caterpillars, it is not difficult to approach them under cover of a tree or thickets. When one is then killed and falls to the ground, the whole flock comes over the dead bird, as if bent upon carrying it off. An excellent opportunity is thus afforded of shooting as many as may be wanted, and this is done by several of these hawks in this manner, any at least so I could hear my gun. The Swallow-tailed Hawk appears immediately after its arrival in the southern states; and its cuptrils take place on the wing, its motions are far more beautiful than ever. The nest is usually placed in the top branches of the tallest tree or pine tree, in some of the ors of a stream or pond. It resembles that of a common crow externally, being formed of dry sticks, mixed with Spanish moss, and lined with coarse grass and a few feathers. The eggs are four to six, of a greenish white colour, with a few irregular blotsch of dark brown at the larger end. The male and female are alternately, the one feeding the other. The young are at first covered with buff-coloured down. Their nest very early exhibits the pure white and black of the old birds, but it has any of the glossy purplish tints of the latter. The tail, at first, is not slightly forked, becomes more so in a few weeks, and at the approach of autumn exhibits little.
white, streaked with dusky; breast, belly, and thighs, rus- 

sous brown, each feather with a central longitudinal streak 
of dark brown; under surface of the wings, near the body, 

ears, with dark bars; other feathers vary; head, neck, and 
wings edging the outer part of the wing; under tail-coverts plain 
rufous-white; under surface of the tail-feathers grayish-
white, with the dark bars of the upper surface showing through; 
tarsi and toes yellow; claws black (Yarrell) 

The females are less pronounced.
Habits.—Food—Reproduction.—The Kite sails gracefully 
in the air, now describing circles and anon with outspread 
tail remaining stationary. It pounces on its prey, 
consisting of moles, mice, leverets, rabbits, unhatched birds, 
and the young of the Gallinacea. In the spring it will 
when more plentiful than it is at present, a great scourge to 
the poultry-yard. It will eat frogs and snakes, and, in the 
'Magazine of Natural History,' an observer hears with 
pleasure to its taking fish from a broad river near which it resided. 
The nest, made of sticks, and lined with soft materials, is usu-
ally built on the fork of a tree in a thick wood. The eggs are 
two, sometimes three, short oval, 2 inches 2 lines in length 
by 1 inch 9 lines in breadth. They are of a dirty white, 
with a few reddish-brown spots at the large end. The female 
lays early in the season, and she often makes a vigorous 
defence when her nest is attacked.

Locality.—France, Italy, Switzerland, and Germany; 
less abundant in Russia; more rare in Holland; migratory 
in autumn. (Temminck.) Very common near Rome, 
and especially near the cattledomesticated. It occurs in Siberia and 
the country about Lake Balaik; and has been observed in Egypt, and several parts of 
Africa north of the equator. In Ireland it does not seem to be known. 
In Britain, especially in the southern counties, though an abundant 
species, it is best known in the British Museum; and in some of 
the counties of England it is called the Puttock, a name 
also sometimes bestowed provincially upon the common 
Bazzard. In Essex it is called the Crooked-tailed Pudd-
duck.

Milvus (of Author).

Best moderate, weak, subangular above; nostrile ob-
ique, elliptical; taila short; acrocallum scutellated; wings 
very long, fourth quill longest; tail forked.
Example, Milvus vinaceus, Falco milvo of Linnæus; Milvus 
vinacius of Fleming and Gould.

Description.—This is the Milvus Royal of the French 
from Belon to Buffon; Pajama, Milvo, Nicchio, and Nibbio 
of the Italians; Rother Milian of the Germans; Glenta of 
Brannck; Gliada of the Fauna Suecica; Kites, Fork-tailed 
Kite, Gale or Gliada (Penman says from the Saxon 'Gliada') 
of the modern, and Barefoot of the ancient British. In some 
of the counties of England it is called the Puttock, a name 
also sometimes bestowed provincially upon the common 
Bazzard.

In Essex it is called the Crooked-tailed Pudd-
duck.

Milvus vinaceus.

Length about twenty-six inches; beak horn-colour; cere 
and eyes yellow; feathers of the head and neck grayish-
white, streaked along the shaft with ash-brown; feathers 
of the back and wing-coverts dark brown in the centre, 
basally edged with rufous; inner web of some of the ter-
rinals edged with white; primaries nearly black; upper 
tail-feathers reddish brown, the outer 
web of one uniform colour, the inner webs barred with 
dark brown; the outer tail-feather on each side the darkest 
in color; tail deeply forked; chin and throat grayish
Savigny, Swainson, Vieillot, and Yarrell. Some of Frisch's figures are good. There are many fine and expensive works (the Planches Balomâncies, for example) which contain figures in these respects; but most of them are sadly deficient in character, and look like what they were mostly taken from, ill-stuffed specimens. There is more to be learnt from the wood-cuts of the heads by Swainson in *Fauna Boreali-Americana* and the "Classification of Birds," than from the most gorgeously colored ill-shaped engravings. The magnificent works of Audouin and Gould are full of the character of the respective species: Swainson particularly excels in this, whether he pourtrays the bird in his beautiful drawings, or gives an epitome of its leading points in the notes composed of a very curious kind. The figures in Yarrell's "British Birds" are excellent, and charming examples of the perfection to which wood engraving can be carried.

**Fossil Falconry.**

Dr. Buckland notices the remains of *Falconidae* in the 1st period of the Tertiary series (Eocene period of Lyell), and figures a *Buzzard* (Buteo), as recent and fossil, in the first plate of his Bridgewater Treatise.

**Falconry or Hawking,** the art of training and flying hawks to take other birds. Julius Firmicus, who lived in the middle of the fourth century, is the first Latin writer who speaks of falconers and the art of teaching one species of bird to catch and eat another. The art of hawking ever, in all probability, practised in the East from remote ages; whence it certainly came to Europe.

From the Heptarchy to the time of Charles II. falconry was the principal amusement of our ancestors in England: and it was only lately stirred out of his hand, which, in old illuminations and upon ancient seals, is the criterion of nobility. Harold, afterwards king of England, is thus represented in the Bayeux tapestry, when visiting the court of William duke of Normandy.

Falconer (4to. Lond. 1812, p. 310) states that King Alfred had his falconers among the persons whom he encouraged for their skill in different professions; and a metrical treatise on the art of falconry, still extant, is ascribed to King Edward the Confessor.

In 'Domesday the practice of falconry is illustrated by numerous entries. In several places we find a sum, no less than ten pounds, made the optional payment instead of finding a hawk (Domesd. tom. i. fol. 134, b. 230); and once, at Worcester (tom. i. 172) a Norwegian hawk is specified. Aeries, or places destined for the breeding or training of hawks, are entered in the Survey of Buckinghamshire, Gloucestershire, Worcestershire, Herefordshire, Shropshire, and, more frequently than in other counties, in Cheshire; as well as among the lands between the Ribble and the Mersey. (Hist. Lanc. 3rd ed. tom. i. pp. 180, 252 b; 256 b, 257, 264, 265 b, 266 b, 267 b, 269 b, 269, 270.)

Nor were hawks less prized at subsequent periods. According to Mallock (Hist. Essex. i. 273), in the 14th Hen. III., Walter Crew, one of the king's tenants, rendered his rent at the exchequer in three hawks and three goshawks. King John had also his hawks (Pat. 4, Jot. m. 2); and upon the Patent Roll of the 34th Hen. III. a copy occurs of the letther which the king sent in that year to the king of France, in which he charged, among other things, his hawks, and every day he either hunted or went to the river for the purpose of hawking, as his fancies inclined him. Queen Elizabeth's reign the imprisonment was reduced to three months; but the offender was to find sureties for good behaviour for seven years or lie in prison till he did. (Pennant, Brit. Zoo. 8vo. Lond. 1812, vol. i. p. 212.)

1 Edward III., according to Freissart (Chron. i., c. 210), rode with him in his army; when he invaded France, thirty falcons and goshawks, which had charge of his hawks, and every day he either hunted or went to the river for the purpose of hawking, as his fancy inclined him. Queen Elizabeth is represented enjoying this sport in a wood-cut in *Turvey's* "Falcony," published in 1567; and it was the favourite amusement with King James I.

By an entry upon the Originalia Rolls of the 35th Edw. III. (Origin. vol. ii. p. 267) it appears that a falcon gentil 19s., a tercel gentil 19s., a tercel lousir 64 s., and a lousir for hawks; that they are hardly ever to be given for hawks for the king's use. In an account-book of the 26th Hen. VIII. a goshawk and two falcons were paid at 31s., and five falcons and a tercel at 8s. 4d. In his Adress to the Right Honourable, prefixed to "The Treatise of Hauke and Hawking," published 1712 for "a Had for Hawkes and a Tarsell a hundred marks."

Falconry was attempted to be revived by George Earl of Orford, who died in 1791; and in Yorkshire Col. Thornton had a hawking establishment as a rather later period; Sir John Sebright, and a few other gentlemen, in keeping it in Norfolk at the beginning of the present century. As a rural diversion however, principally in consequence of the enclosures, it has gone into disuse.

A sport which was most sought by sportsmen in the time of Charles I. is given in Walton's "Complete Angler;" and an explanation of the words in art of hawking will be found in Latham's "Falconry," 4to, Lond. 1633.

The earliest printed treatise on hawking in English is the 'Book of St. Alban's,' fol. 1481, ascribed to Julian Barnes or Berners, abbes of Sopwell. [Berners.] There are numerous other and curious treatises upon falconry both in French and English, some of them of very rare occurrence, and imported in some cases from France and Germany, which, published at Paris in 8vo. without date, was the first work upon the subject printed in the French language.

For further information upon Falconry and its practice, the reader is referred to a harangue about a hawk on horseback, in his hand, which, in old illuminations and upon ancient seals, is the criterion of nobility. Harold, afterwards king of England, is thus represented in the Bayeux tapestry, when visiting the court of William duke of Normandy.

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in 1715, of the earl of Linlithgow and Callander, by whose forfeiture his estates and superintendencies became vested in the crown. In 1720 the estate of Callander was purchased by the York Buildings Company, from whom, in 1753, it was leased by Mr. Forbes, who was the father of the present occupier. During the time the estate was held by the York Buildings Company there was always a resident baron-baillie; and Mr. Forbes continued to name a person to that office till about the end of the last century. Since then the office has been vacant.

The management of the affairs of the town and community is at present vested in two separate bodies, the stentmasters and committee of feuars. The stent-masters are elected annually, and are twenty-four in number; four being chosen by the merchants, four by the trades or guilds of hammermen, wrights, weavers, shoemakers, masons, tailors, bakers and brewers, and four from the suburbs of the town. Any person belonging to any of these trades is qualified to vote for and to be elected a stent-master of his craft.

By the Act the Park's Sinclair's Park's a part of Falkirk obtained a municipal constitution. The council consists of a provost, three bailies, a treasurer, and seven councillors. According to the return for 1831 the burgh and parish of Falkirk contained 12,743 persons. It returns a member to parliament in union with the burghs of Lanark, Linlithgow, Hamilton, and Airdrie. The debt of the town is 1700l. its revenue about 600l. and annual expenditure 174l. The patronage is in the crown. Near Falkirk the Pretender gained a victory over the royal army on the 16th of March 1746. The cast of the Roman wall, known by the name of 'Graham's Dyke,' built in the time of the Emperor Antoninus Pius. The grammar and English schools of Falkirk are in high repute: they are all private except the parish one, the master of which is appointed by the corporation. The Falkirk Museum consists of the works of Mr. Playfair. The statistical account of Falkirk; Sinclair's Statistical Account of Scotland; Boundary Reports; Municipal Corporation Reports, 1835; Population Return.

FALKLAND, HENRY CARY, Viscount, descended from the Carys of Cookington, was the son of Sir Edward Cary of Berkhamsted and Aldenham in Hertfordshire, at which latter place he was born late in the reign of Queen Elizabeth. When about sixteen years of age, he was sent to Exeter College, Oxford; but he left that university without taking a degree. In 1608 he was made one of the Knights of the Bath, at the creation of Henry, Prince of Wales; and in 1617 was sworn in Comptroller of his Majesty's household, and made one of his privy council. On the 10th November, 1620, he was created Viscount Falkland.

In 1622, while in India, knowing his abilities and experience, constituted him Lord Deputy of Ireland, into which office he was sworn September 18th, 1622, and continued in it till 1629. During his administration he is said to have kept a strict hand over the people, and to have occasioned a great number of complaints by sending complaints to the court of England against him, till, by their clamour and prevailing power, he was removed in disgrace. Leland in his 'History of Ireland,' has given the character of his government. 'Lord Falkland, he says, seems to have been more distinguished by his rectitude than abilities. In a government which required vigour and austerity, he was indolent and gentle; courting rather than terrifying the factious. He was harassed by the intriguing clamours of the king's ministers, who were jealous of the errors of the opposition, and desired his actions were severely malignured at the court of England; his administration in consequence was cautious and embarrassed. Such a governor was little qualified to save the 17th of January, 1626. Lord Falkland was also a part of the time on their merits, and stimulated by their ecclesiastic to the most imprudent excesses.' Lord Falkland returned and lived in honour and esteem till 1633, in which year, in the months of September, he died, in consequence of having been taken ill with a severe cough, which remained unrepresented in the Harleian Collection of Manuscripts in the British Museum. Lord Orford says he was remarkable for an invention to prevent his name being counterfeited, by artfully concealing it in the successive years of his age, and by that means, detecting a man who had not observed so nice a particularity. (Biogr. Brit., Kippis's edit, vol. iii, p. 290; Leland's Hist. of Irel., vol. ii, p. 474; Park's ed. of Lord Orford's Royal and Noble Authors, vol. ii, p. 476)

FALKLAND ISLANDS, The, are a group of islands situated in the southern Atlantic Ocean, between 51° 40' and 52° 10' S. lat., and 57° 30' and 60° W. long. There are two larger islands, called East and West Falkland, and a number of smaller ones, which is said amount to more than 90. The strait which separates the larger island called Falkland or Carlita Strait, and is from six to ten miles wide. The surface of both islands is calculated to be about 3400 square miles, or about 1000 miles more than that of Devonshire. The northern islands in both islands are rather mountainous, but the highest ground does not exceed 2000 feet above the sea-level. At the foot of the mountains the plains stretch from five to fifteen miles along the margin of the sea; the southern districts are more level, and hardly and a hill. The whole coast, especially in the northern districts, is much indented, and contains many harbours; among which the most frequented are Berkeley Sound on West Falkland and Port Egmont on East Falkland: both these bays are spacious, of sufficient depth for men-of-war, and have excellent anchoring grounds. The climate of these islands does not differ much from that of the British islands. The range of the thermometer is between 26° and 75°; in winter between 26° and 50°, and in summer between 50° and 75°. The weather is rather unchangeable, and the winds are moderate and constant. It is frequently said that the weather has a separate effect on the tops of the mountains, and the ice is seldom above an inch thick. Fogs are frequent, especially in autumn and spring, but they usually disappear towards noon. The vegetation is very rapid. No trees grow on the islands, but wood for building may easily be obtained from the Strait of Magallanes. Peat and some bushes, which are abundant, supply fuel. Several antiseptic plants grow in abundance. The islands contain foxes, but they differ from those of Europe, having a larger head and a shorter tail. Seal, and atVent, and a few fur seals, live near the close to the islands. Many black whales are caught in the neighbouring seas. A kind of fish, between the mullet and the salmon, is very abundant, especially in spring. Game is extremely common, especially wild geese and ducks, which are easily tamed. The flocks of gulls and penguins which visit these shores are valuable on account of their eggs.

The Europeans who settled in these islands about the middle of the last century brought with them domestic animals, and some of them have remained, and some of them thrive well. There are herds of wild horned cattle and of wild hogs; the horses are of small size, but very hardy, and may be broken in, though with some difficulty. Rabbits are very numerous, of a large size, and have a fine hide. The soil, especially on the base of the mountains and hills, is well adapted to cultivation, consisting generally of from six to eight inches of black vegetable mould. Wheats and flax have been raised, and potatoes, cabbages, turnips, and other kinds of vegetables, largely and of excellent quality. As to other kinds of produce, the capabilities of the soil have not yet been ascertained. It is probable that even fruit-trees will succeed in sheltered places.

These islands were discovered by Hawkins, who called them Hawkins' Maiden Islands, and afterwards again in 1689 by Strong, who gave the name which they now bear. A French vessel from St. Malo landed here in 1710, and named them Isles Malouines. The French formed a settlement in 1740, called St. George, but afterwards relinquished it. The English settled in Port Egmont in 1765, but after a few years they were expelled by the Spaniards. A negotiation followed, by which the English recovered their settlement, and took occasion Dr. Johnson wrote a pamphlet about the islands in answer to one of the letters of Junius, in which he deprecated their value as much as Junius had exaggerated it. The English kept possession of this place up to 1774, when it was again given up. When the present colonial, the whale-fishery in the seas surrounding the antarctic pole began to become important, these islands again attracted attention, and this interest was still further increased when the commerce with the western coast of
South America was opened to all nations by the navigation round Cape Horn. The English again formed a small settlement in Port Egmont in 1817, principally as a place of refreshment for the whalers. Berkeley Sound, which is better situated for vessels bound round Cape Horn, was settled by a small colony sent there from Buenos Ayres in 1832, but the English government took possession of it soon afterwards. [London Geog. Journ., III. and VI.]

FALL OF BODIES. Under this head we propose simply to describe the velocity with which the fall of a material substance, supposed either to be allowed to drop or to be projected directly upwards or downwards. The motion of a body projected in an oblique or horizontal direction comes under PROJECTILES, THEORY OF; the motion of a body which causes the descent or retard the ascent, under ACCELERATION, GRAVITY, &c.; and, the circumstances which influence more or less the results about to be specified, under PROJECTILES, RESISTANCES, MOTION OF THE EARTH; MOTION, LAWS OF.

The resistance of the air does not greatly affect the motion of bodies, unless either — 1. the bodies themselves be very light, as in the case of feathers, or — 2. the velocities be very great, as in that of a cannon-ball. The law according to which this resistance acts is not well ascertained for great velocities; but for moderate velocities it is not far from the truth to say that it is as the square of the velocity: that is to say, whatever resistance there may be to a velocity of 10 feet per second, there is four times as much to 20 feet, nine times as much to 30 feet per second, and so on.

Neglecting the resistance of the air, let us first suppose a body (say a bullet) to be allowed to drop from a height above the earth. The law of its motion is as follows. It accelerates uniformly at the rate of 32 feet per second: that is, at the end of a quarter of a second it is in such motion as would, were the action of the earth to cease, cause it to describe 24 feet in a second. At the end of one second the rate of motion is 32 feet per second; at the end of two seconds, 64 feet per second, and so on; that is, the fall of a body is a uniformly ACCELERATED MOTION.

In the article just cited the law of this motion is further explained. We shall here collect the principal formula connected with the subject, referring to PENDULUM and ARROW, and the subject, for this manner in which the main facts of the acceleration being 32 feet per second is proved and verified.

\[ g = \frac{32}{s} \]

is the number of seconds during which the motion has lasted when the body has attained a velocity of \( v \) feet per second, having descended a length of \( s \) feet.

Firstly, suppose the bullet simply to drop without any initial impulse being communicated. Then

\[ v = gt, \quad s = \frac{1}{2}gt^2, \quad v^2 = 2gs. \]

Thus, either of the three, \( v, t, s \), being given, the others may be found.

Secondly, suppose the bullet to be projected downwards with a velocity of \( a \) feet per second; the consequence is still a uniform addition of \( g \) feet per second to the velocity, and we have

\[ v = at + gt, \quad s = \left(\frac{1}{2}a + \frac{1}{2}g\right)t^2, \quad v^2 = 2g(at + \frac{1}{2}gt). \]

Thirdly, suppose the bullet to be projected upwards with a velocity of \( a \) feet per second. The action of the earth begins by producing a loss of velocity at the rate of 32 feet per second. This lasts until the velocity of the bullet is reduced to zero, for which it begins to descend without any initial impulse, and we have the first case repeated.

During the ascent

\[ v = -at - gt, \quad s = \left(\frac{1}{2}a - \frac{1}{2}g\right)t^2, \quad v^2 = 2g(-at - \frac{1}{2}gt). \]

and the height through which the bullet will ascend is \( -a^2 - 2g \) feet, the time of doing which is \( a + \frac{1}{2}g \) seconds. After this the first case may be repeated: but this is not necessary; for the preceding equations will continue to reproduce the results of the laws which have been provided that which becomes negative, be interpreted as indicating that the turn has taken place and the bullet has begun its descent, and also that \( e \) becomes negative be interpreted to mean that the bullet has returned upwards, which is through the point from which it was first thrown, and fallen below it. For example (supposing \( g = 32 \) for simplicity), let a bullet be projected upwards with a velocity of 100 feet per second, where will it be, and at what rate will it be moving, at the end of ten seconds?
Before the period of conception these tubes are observed in the lower animals to become more full of blood, and to have a whirling peristaltic motion like that which impels the aliment along the intestinal canal. Certain prominences are thus formed on the walls of the ovaries, produced by the maturation and swelling of the Graafian vesicles, which are the ova or germs of the future progeny. The Fallopian tubes then become attached by their open fimbriated mouths over these prominences; and receiving the vesicles as they burst through the peritoneal covering of the ovaries, convey them by the peristaltic motion we have mentioned into the uterus.

Whether these germs are always fecundated before they reach their destination is disputed. Such is unquestionably the fact in which is called the oviparous conception. In these cases the germ never reaches the uterus at all, but remains in the intermediate canal and becomes attached to its surface; and in this position it may attain its full size, expanding the tube as it grows, till at length it gives way, and the excess of fluid and swelling of the tube is then expelled over the walls of the canal into the general cavity of the abdomen. Such cases are not necessarily fatal; the fetus, dead of course, sometimes becomes enclosed after a certain period in a membranous cyst, gradually extended around it from the parieties of the abdomen; and may remain for many years without exciting much irritation. In other instances abscesses form and break in succession, discharging the horns and other unabsorbed parts of the fetus, and the case eventually does well. But such results are rare; and nothing but the carnesean operation affords much prospect of success.

FALLOPIUS, GABRIELLO, or FALLOPIUS, was born at Modena about the year 1523. He was one of the three distinguished anatomists of the sixteenth century, to whom Cuvier, an unquestionable authority on such subjects, has assigned the most important influence on the science in its modern and exact form. His associates in this award of praise are Vesalius and Eustachius, the former of whom he succeeded in the united professorships of anatomy and surgery at Padua in 1551. The latter taught at Rome for a short time with success, and perhaps with more ability, and their writings indicate some mutual jealousy. [EUSTACHIUS.]

Fallopius appears at one time to have held an ecclesiastical appointment in the cathedral at Modena, which he resigned to devote himself to more congenial pursuits. Having gratified his curiosity by travelling through the most interesting parts of Europe, he settled for a time as a public teacher of anatomy at Ferrara, where he had received a medical education. But he soon quitted that unprofitable pursuit to allow the lustre of his name to attract students; and had lectured at Pisa for some years with increasing reputation under the patronage of the first Grand Duke of Tuscany [Cosmo I.], when he was induced by the liberality of which the Duke was possessed to take the place of Vesalius, who had been obliged to resign his academic offices by one of the disastrous accidents which have thrown a romantic interest over the latter part of his remarkable life. [VESALIUS.]

The field of his useful labours was also confined to one department of natural history. He appears to have occupied himself among the rest with the subject of systematic botany, which had very recently begun to attract attention. In this, as in all other steps in the revival of learning, he was veered, and could not have been established at Pisa by Cosmo de' Medici in 1543, and was at this time under the management of Cesalpinus. [BOTANY.]

The second was established two years later at Padua; and the charge of this garden, with the professorial duties connected with it, was confided to Fallopius soon after his arrival in that university. The botanical researches and collections he had made during his travels, and his subsequent opportunities at Pisa of access to the best sources of contemporary information, had probably fitted him in no common degree to the public service and honours which he is said to have sustained with great ability and applause. He did not write, and we are not aware that he lectured expressly on the subject of botany as a system; but there are many allusions to it in his works, and among them are several with reference to the preparation and use of various medicinal herbs, as well as of the mineral substances employed in pharmacy.

In addition to his merit as a naturalist and a teacher, Fallopius was an excellent and expeditious operator, and otherwise, for his time, a good practical surgeon. His cha-
from the roots, which may be looked upon as the residuum of the natural process. De Candolle, Raspail, and other eminent physiologists have placed this point beyond controversy. It has yet been left to botanists to collect the facts necessary to analyze and compare them; and the reasoning on the subject has been merely conjectural. In particular soils and situations a scoring hill has a peculiar effect on the soil which is exposed to its rays; and where the same hill is exposed, but the soil is kept covered, it seems to have acquired fertility, which the exposed surface has not. But this is not sufficient to establish a general rule. Some soils which are of a wet nature are greatly improved by being as were baked in a hot sun. Not only are the stones dislodged by the action of moisture, but the soil itself becomes lighter and more friable. On sandy soils the reverse is the case, and on intermediate loams the effect will be more or less advantageous as they approach nearer to the clay or to the sand. In light sandy soils the effect is to kill weeds, especially the couch-grass (triticum ripenstes), which is apt to infest light soils; and that the exposure to the sun in hot weather is not only an advantage, but probably detrimental. If, then, any means can be found for keeping the land bare of vegetation during the fallow, this benefit would be increased by leaving the surface fallow for a whole summer, a great advantage will be obtained. This has been effected completely by the cultivation of turnips and clover, which was first practised in the light soils of Flanders, and afterwards introduced into Norfolk, from which it has spread all over Great Britain, and is beginning to be adopted more generally in Ireland. The advantage of the turnip culture is so great in light lands, that it has gradually been extended through the different grades of loams, till it has become almost general in those parts of England, on which its culture would at one time have been thought absurd to attempt to raise root. But this has been attended with an important benefit. It has made the cultivators of heavy soils turn their minds to the great advantage of the barley and turnip fallow; and although the extended culture of this useful root is not what we should recommend for cold wet clays, we highly approve of all improvements which will make such lands capable of bearing good crops of turnips. Unless the turnips can be naturally improved upon the land, it is necessary to have recourse to manures; and the rich manure which comes from them is a decided advantage in improving these soils. The turnips, the abundant manuring, and subsequent hoeing are as effectual in cleaning the land and bringing it into a fertile state as any complete fallow would ever have been. The following year the land may be sown to barley or oats, and the first ploughing may not be too shallow, and the harrows should be set to work before the wet weather sets in. When the surface is become mellow and clean, the land may be ploughed deep, and the soil below should be brought up and exposed to the air and to the action of frost; but if the weather is very bad, it may be ploughed again before the soil is hard. It may then be ploughed in narrow ridges right across the old stiches, or obliquely, and left for the influence of summer. The drag will level all these ridges when the manure is to be put on; and both this and the following year, it will be seen whether the crop is intended. If it is left for barley, it must have another ploughing in spring, and be well harrowed before the seed is sown, especially if it is done by the driller. It is then sown, and in another season the same land is again sown, and another ploughing is omitted. There is no danger of making it too fine in spring. Without a fine tilth no good barley can be expected.

FALMOUTH, a parish, borough, market, and seaport town, situate on the county of Cornwall, and on the south-western shore of the sea, 54 miles south-west from Launceston and 267 miles west-south-west from London, in 50° 8' N. lat. 5° 3' W. long. The town is situated at the mouth of the river Fal, thence it derives its name, and consists principally of one street, which extends along the south-western shore of the harbour for about a mile. There is a convenient quay, a town-house, and gaol erected in 1831. The water near the quay is of sufficient depth to allow vessels of considerable burthen to discharge their cargoes on the wharf. Adjoining to the principal street, and between the market-place and the quay, is a handsome building, the house of the Corporation, and also the market-place and town-hall. The Public Rooms, a handsome building, is situated in the heart of the town; and not far from it is the polytechnic hall, a spacious and commodious structure, in which are held the annual exhibitions of the county. The seaport is the chief town of the county. There are several several schools and numerous char-

best to do the thing effectually. Upon cold wet soils, which should always first of all be well under-drained, no pains should be spared to get the land perfectly clean; it should be ploughed and harrowed with the greatest possible diligence in the fall and spring. Avoid fallow if you can keep your land clean; but when you do, it effectually, and improve the soil at the same time by chalk, lime or marl, according to circumstances. Do not spare either ploughs or harrows in dry weather. Lay the stiches high and dry, and so arrange the fallow that the greatest possible space, By following these rules the stiffest land may be brought into a good state of cultivation; and the farmer will not find by the growth of weeds, docks, and thistles, that his labour and manure are thrown away, as is too often the case. Experience has fully proved that the air and the crops improve the fertility of the soil, and that land which has been well fallow and stirred requires less manure than it would otherwise do. Fallowing alone will not make up for want of manure, nor will manuring be sufficient without ploughing; we have seen that the influence of the atmosphere, especially in autumn and in spring: but a great saving of the one and the other may be effected, by judiciously varying the crops so as to admit of ploughing the land at different seasons of the year. It is true that in some cases the plough alone is sufficient for all the purposes of fallowing.

This is a great error, which leads to useless and unnecessary labour. We would almost say that ploughing the fallows is a matter of infeclency, except to enable the drags and harrows to stir the land. The state of the weather ought not to be too shallow, and the harrows should be set to work before the wet weather sets in. When the surface is become mellow and clean, the land may be ploughed deep, and the soil below should be brought up and exposed to the air and to the action of frost; but if the weather is very bad, it may be ploughed again before the soil is hard. It may then be ploughed in narrow ridges right across the old stiches, or obliquely, and left for the influence of summer. The drag will level all these ridges when the manure is to be put on; and both this and the following year, it will be seen whether the crop is intended. If it is left for barley, it must have another ploughing in spring, and be well harrowed before the seed is sown, especially if it is done by the driller. It is then sown, and in another season the same land is again sown, and another ploughing is omitted. There is no danger of making it too fine in spring. Without a fine tilth no good barley can be expected.
riable institutions. On the whole Falmouth is a nest and
sterile well-built town. It is lighted with gas, and con-
tains two good hotels. The suburbs are adorned with se-
veral villas, which, together with the harbour, when seen
from the surrounding hills, have a very beautiful aspect.
The town was granted a charter by King James I., date 13 Charles II.
The governing body, under the Act 5 and 6 William IV.,
consists of a mayor, four aldermen, and twelve coun-
sellors. The corporation has no revenue whatever; the tolls
of the town are paid to the Crown. Lord High Admiral
lives at the town. The only police are the constables appointed by
the town council, and for all other expenses being paid by a rate.
According to the returns made in 1831 the population of the
wards and parishes of Falmouth was 7294, of which the town
alone contained 3977 and produced successive years a
large surplus of births and deaths. Falmouth stands
north-east of Newlyn, and in union with Penryn returns two members.
The market-days are Tuesday, Thursday, and Saturday, and
the fairs are held the 7th August and 10th October.

The harbour, which is extensive and well protected by
the surrounding high lands, is so convenient situated that
vessels have frequently been able to proceed on their voyage
from this port, while those from Plymouth and Portsmouth
have been forced back by contrary winds before they could
reach L. Harrow in the last days of December. The
berthage by desultories; one, towards the west, called Pendennis, and the
other, towards the east, called St. Mawes. Carew has, in his
Survey of Cornwall (London, 1602) states that both these
eraths were built by Henry VIII., and subsequently im-
proved by Sir John Killigrew, bart., an enterprising individual,
who obtained permission from James I., to construct a
new quay, laid the foundation of the present town, and
provided an act of parliament, by which the payment of certain
duties were secured to himself and heirs. The subsequent
establishment, about 1688, of the post-office packets to the
West Indies, Lisbon, &c., contributed much to the rising
prosperity of the place. In 1706 there were 350 houses, in
1726 upwards of 500, and in 1811 there were 647 inhabited
houses in the town and suburbs. Large amounts of specie
and bullion are landed from the packets arriving from
Spain, Portugal, and America. The steamers which run
between London and the Mediterranean invariably call
here, and the annual number of passengers, &c., amounts
upwards of 40,000, besides about 20,000 from the Mediter-
narian, the voyage is made by about 400 passengers and
coals; and the Peninsular Steam Navigation
Company, having recently contracted with government to
carry the mail, one of their powerful vessels now leaves the
town every Monday. This alteration in the conveyance of the
post-office packets is a necessary change connected with the Peninsular. About the middle of the en-
trance to the harbour is a large rock called the Black
Rock, which is traditionally said to have been the island
where the Enchanted Court once stood. In Cornish, the
name of the island is Kewennew-House, the antient
seat of the Killigrew family
P. C. No. 619

(Borlase's Antiquities of Cornwall: Carew's Survey of
Cornwall; Mc'Clure's Commercial Dict.; Boundary Re-
ports; Municipal Corporation Reports; Population Re-
turns; Ecclasticical Revenue Reports.)

FALSE POSITIVE, a rule of arithmetick, which, though
originally applied to the solution of questions by
equations of the first degree, has been in modern writings, and
upon principles explained in APPROXIMATION and
INTERPOLATION applied to equations of all degrees. It is however
of very little use in quite so simple a case as the one
by me mentioned, and a general explanation will be sufficient.

Let there be a function of $x, \phi x$, which is desired to
make equal to $a$, and, firstly, let this function be such
that successively equal increments added to the value of $x$
and $\phi x$ will produce successively equal increments.

Then the value of $\phi x$ (which, in fact, supposing that $\phi x$ is of the
form $m z + n$): assume two values for $x, p$, and $q$, and let the
corresponding values of $\phi x$ be $P$ and $Q$. If then (to use
the easiest form of speech) a uniform increase of $x$ is accom-
panied by a uniform increase of $\phi x$, and if $x$ represent
the value which makes $\phi x$ equal to $a$, it follows that the inter-
val between $P$ and $Q$ bears to that between $p$ and $q$ the same
proportion as the interval between $P$ and $a$ bears to that
between $p$ and $x$. Or $x$ can be obtained from the propor-
tion

$$P - Q : p - q : - \frac{a}{P} - x : p - x$$

If the preceding be not easily understood, the same propor-
tion may be immediately deduced from

$$m (x + a) = n x + a$$

which follow from the several hypotheses made.

When $x$ and $\phi x$ do not increase uniformly together, it is
nevertheless true that they do so nearly when the succes-
sive increments added to $x$ are very small. If then $p$ and $q$
are two values of $x$ and $\phi x$, which are so near that the
preceding proportion will produce a value of $x$ which is
nearer the truth than either $p$ or $q$, and may be substi-
tuted for either in a repetition of the process, which
will then produce a still nearer value.

The rule of False Position, as thus extended, is simply
Newton's well-known method of approximating to the roots
of equations, with this difference, that instead of the differ-
ential co-efficient of $\phi x$, the approximation ($P - Q$)/($p - q$)
holds. The equation of the first degree is one in which
either method will bring an accurate result without
error; but the notoriety of the rule of False Position arose out of its
applying that a couple of errors, or wrong solutions, were
made infallibly to give the right result: and thus it is that
Recorde says he can solve mathematical questions by taking
the answers of any children or idiots who may be in the room.

To persons ignorant of algorithm there seems to be a mystery in
the ability of being able to make any two guesses, however
remote, to discover the truth. Thus, what is that number
which, if to the number 10, make 23, or 12, make 62?
Make any guess, say 12: the half, third, and fourth of 12,
together with 10, make 23, which is wrong. Make another
guess, say 50, which produces 75, also wrong. The
difference which the wrong result 52 shows bears to the difference
of the true errors, 40, 12, or 4, of the same propor-
tion as the excess of the result 75 over 62 (the required
result) bears to the excess of 60 over the truth. But 52 : 48
15 : 12, or 12 is the excess of 60 over the truth, that is, the
true answer is 48, as may easily be verified.

Where the equation is of the form $mx = a$, one guess only
will suffice. If the assumption of $p$ give $P$, or if $mp = P$,
then $P : p : a : x$

FALSETTO, in Music, an Italian term, signifying a
false or artificial voice produced by taking the liga-
ments of the glottis, and thus the vocal compass is extended
about an octave higher. The Italians call the falsetto
voce di testa, or voice from the head; the natural voice
voce di petto, or voice from the chest.

FALSTER, a Danish island in the Baltic, due south
of Seeland, and east of Laaland or Lolland; between 54° 30' and
54° 58' N. lat., and 11° 45' and 12° 11' E. long. The
strait called the Gaabornesund separates it from Seeland,
and the Goldburnden from Lolland. For the
Borlase, in his Antiquities of the County of Cornwall,
mentions the finding of a large quantity of Roman coins on
a branch of Falmouth harbour, nearly the whole of which
were of the coinage of the Emperors Gallienus, Carninus,
and Maximinus. On the east side of the
extremity of the town stands Arwinnick-House, the antient
seat of the Killigrew family

VOl. X. - 2 c
mosphere, and is accounted one of the best cultivated and most productive parts of the Danish dominions. The surface of the south side of Denmark is composed of long tongues of land, formed by an arm of the sea called the Noret. The western tongue of land has a lighthouse upon it, beyond which a reef of rocks extends far into the sea. The soil is equally thick, but less swampy than that of the other Danish islands near it: the produce of grain is more than adequate to the consumption, so that between 30,000 to 35,000 quarters are annually exported. Flax and hemp, hops, potatoes, and other vegetables, are grown. Large districts are raised in potatoes in pastures; there are considerable articles of exportation. The woodlands occupy about one-sixth of the whole surface. Horned cattle and a native race of sheep are bred, and the forests afford food for a great number of swine. Much wax and honey are collected; and in this branch, as well as in the others, they are abundant.

There are no rivers but the Aar, an inconvenient stream, and the short river through which the Mariboerse, a large lake, has an outlet into the sea. There are no manufactories in the island, and the produce of it is chiefly

better served by an official interpreter, honoured with the full confidence of the government, the rule of the officers who had hitherto been employed. The government acted on this suggestion, and Pausanak was nominated dragoman of the divan, or translator to the council of the state. The successors of Pausanak continued to exercise the advantage conferred on their predecessor, which were gradually enlarged. From that time the ambition of the Fanariote families became entirely turned in that direction, and they instructed their children in the Turkish, Italian, and French languages, in order to enable them to discharge the duties attached to the office of the dragoman.

In the progress of the time the divan created another dragoman, who was called the dragoman of the fleet, whose duty was to accompany the captain pasha, or grand admiral, on the annual voyage, and to make an important set of writings in the absence of the grand vizier.

The fanar, which, with the exception of Cyprus and Candia, were governed by officers called moecolumists, chosen by the government of Turkey, was in the beginning of the nineteenth century, the fleet always purchased the appointments to those offices, which he resold with considerable profit. The captain pasha never acted without the advice of the dragoman, who even frequently acted as his master's deputy in the latter's absence.

Panasak, thus invested with the office of dragoman of the divan, being the only agents of communication between the Porte and the European governments, necessarily acquired a great importance over the Turkish government, and consequently a considerable share in the management of the state. In the beginning of the eighteenth century the Fanariotes succeeded by their intrigues in prevailing on the Turkish government to choose from among them the Haidar or prince of Moldavia and Wallachia, which dignities were bestowed on natives of the above-mentioned provinces.

Maurocordato was the first Greek who was nominated Hospodar of Wallachia in 1711. A crowd of Fanariotes, therefore, vied with each other in applying for the appointment of dragoman of the fleet, which, with the exception of Cyprus and Candia, were governed by officers called moecolumists, chosen by the government of Turkey, was in the beginning of the nineteenth century, the fleet always purchased the appointments to those offices, which he resold with considerable profit. The captain pasha never acted without the advice of the dragoman, who even frequently acted as his master's deputy in the latter's absence.

Panasak, thus invested with the office of dragoman of the divan, was generally considered by the government of Turkey, as the only agents of communication between the Porte and the European governments, necessarily acquired a great importance over the Turkish government, and consequently a considerable share in the management of the state. In the beginning of the eighteenth century the Fanariotes succeeded by their intrigues in prevailing on the Turkish government to choose from among them the Haidar or prince of Moldavia and Wallachia, which dignities were bestowed on natives of the above-mentioned provinces.

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An interesting picture of the Fanarotes is given in Mr. Hope's celebrated novel 'Jasparides; or, The Memorias of a Greek,' as well as in the 'Essai sur les Fanarotes,' by M. Zallony; and in a work published by Von Hammer, called 'Constantinople and the Bosphorus.'

The event which removed the last Greek revolution has considerably diminished the importance and altered the position of the Fanarotes.

FANCY, a corruption of phantasty (πανταστης), which term is antient philosophy indicated the sensuous appearance of an object, and is derived from two separate words, the one conveying the subjective conception, or the faculty by which man reproduces images of objects either absent or present, without an immediate impression on the organs of sensation. In later times its signification has been greatly narrowed, and it is now applied to the forms and structures which, however, it is often confusedly found in loose and inaccurate language, and to which it is employed as equivalent. Imagination differs from conception either by the greater distinctness and vividness of its images, or else by combining the manifold and so inexplicable a new and true unity. In the former case it is merely productive; in the latter creative, and becomes fancy:—

'Of all external things Which the eye watchful sense represents
May form Imagination, Milton, Par. Lost. v.

Fancy is a higher energy of the mental activity than imagination simply, but is nevertheless dependent upon it, since it is an assumption of the phantastike to which it creates its phantasies either by modifying or exaggerating them, or by forming new combinations, and by a propensity investing its personification with the properties of real beings. Imagination is necessary to authors generally, but fancy is peculiarly to the poet, who latter presenting him with those lofty speculations which comprise what has been termed the ideal of art, and furnishing the link for that enhancement of his ideas which, rejecting the restraint of all general laws, is wholly dependent upon his own master and other forms of representation.

FANDANGO, a quick dance of 4 or 5 time, universally admired and practised in Spain, and supposed to be of Moorish origin; though Volney ascribes much higher antiquity to it, believing it to have come originally from Carthage.

It is remarkable in Spain that nothing is so proper as according to the degree of delicacy possessed by those who practise.

FANO. [URBHNO E PARSADO.]

FANO. [DENMARK, vol. vii., p. 398.]

FANSHAW, The Right Honorable Sir RICHARD, was for many years resident in Portugal, and was born in 1608, at Ware Park, in the county of Hertford. He became a fellow-commoner of Jesus College, Cambridge, in 1623, and removed to the Inner Temple in 1626. On the death of his mother, who had long survived his father, he set himself to travel, and visited France and Spain. He was subsequently appointed secretary to the embassy at Madrid, and was left resident there till 1638. After his return, and on the breaking out of the civil war, he declined a royal or less attended the court of Oxford, where he regretted the decline of Oxford civil law. He followed the prince of Wales to the islands of Selby and Jersey in the capacity of secretary, and in 1648 became treasurer to the navy under Prince Rupert. At the battle of Waddon Hill, Spain was forced to leave, and was released, and repaired to Charles II. at Breda, who appointed him master of requests and his Latin secretary. He returned to England with Charles, represented Cambridge in 1651, and was employed in negotiating Charles's marriage. He died in 1666, in a single night's imprisonment to Philip IV. of Spain in 1664, and died at Madrid in 1666, leaving a widow and five children. His body was sent home embalmed.

Notwithstanding the active life of Fanshawe, he found leisure to attend to literature, and produced several works, the most celebrated of which is a translation of Guarini's 'Pastor Fido.' The parts of this work written in heroic measure are harsh and ill-managed, but the lighter lyric passages are playful and often melodious, and some of the more sublime choruses are sonorous and majestic. This book is not very easily procured. It was published in 1664, and is adorned with a curious portrait of Guarini's 'Pastor Fido.'

FANTEES, or FANTINS, a nation inhabiting a part of the Coast of Western Africa. The country of the Fanites is bounded by Aeran on the east, and by Sabo, from which it is divided by the Iron Mountain, about three miles east from the Castle of Casamata. Its circumference is limited, according to Bosman, is nine or ten miles. The capital, called Fantin, is placed about fifteen miles inland, but all the other towns of note lie along the sea-coast.

It being their custom to settle in small groups on the coast, the principal are,—Manfre, Leguay, Angu, Contina, the Lesser Cormantin, Aga or Adjia, Annamambu or Janissia, and Anikan or Ingenistan. At many of these places the Dutch, Danes, Portuguese, and English, used to have forts and factories. The Fanites are principally occupied in emplying in fishing. The government antiently seems to have been less of a despotism than that of most of the surrounding nations. 'Here,' says Bosman, 'is no king, the government being in the hands of a chief commander, whom they call their Baffo, a word importing leader. He is a sort of chief governor, and has the greatest power of any in the whole land, but is somewhat closely restrained by the old men, who are a sort of national councillors, not unlike some European parliament, acting perfectly according to their inclinations, without any regard to the justice or policy of the country. The Fanites have been overrun by the Ashantees, and their recent history will be found in the article on that people.

[ASHANTEE.]

FARCE. [ENGLISH DRAMA, vol. ix., p. 417.]
which he laboured twenty-five years, and yet the comment,
except on historical points, rather obscurer than illus-
trates the original. It was prohibited first by the inquisi-
tion of Spain, and more strictly by the laws of Portugal.
This occasioned the following work:—3rd. Defensa
por los Comentarios sobre la Lusitania. 4th. Epitome de
las Historias Portuguesas, or a History of Portugal. 5th.
Impero de la China, y Cultura Evangelica por los Religiosos
de la Compania de Jesus, written by Sermulo, but published
by Faria. The following are his posthumous works:—El
Asia Portuguesa desde 1497 hasta 1640; La Europa Portu-
guesa hasta 1557; El Africa Portuguesa, translated by
John Stevens, 3 vols. 6vo, London, 1796; El America
Portuguesa, a Description of the Spanish Provinces of
Divinas y humanas Flores; Gran Justicia de Aragon; at
the end of which is the Retrato de Manuel Faria, that is
to say, his Life, by his friend Porcel. Besides this work
the reader may consult Bouwerck, Spanish and Portuguese
Literature; Michael Antonius, Biblio. Hrps.; Niccron,
Memoires, &c., vol. xxxvi.

FARINA [Starch.]—

FARM. A farm is a portion of land which is set apart
for cultivation either by a tenant, or by a person who
pays a certain stipulated rent for it. We shall consider it
in this latter sense; and, without entering into the mode
of cultivation, we shall notice the circumstances which
determine the profit that a tenant may reasonably expect to
make, as well as the troubles and dangers in which he
may be involved.
The first thing to be considered in taking a farm is the
capital which the tenant is possessed of, or of which he can
procure the use at a reasonable rate. If a man takes a
farm without the means of stocking it properly, and is
responsible for any damage which he may suffer, he will
be obliged to sell his produce at a loss, to over-work his cattle,
and to keep a smaller quantity of stock, and consequently
must lose money. To keep a farm is required to be in an
inoperative state. It is not sufficient that he has the means
of stocking the farm; he must have wherewith to pay the
greater part of the whole expenses and the rent for the first
year. In the present state of agriculture, a man who takes a
farm on a nearly arable land, and has partly arable, or
parly good pasture, will require from 1600l. to 2000l.;
and it is not the interest, either of the landlord or the
tenant, that he should take the farm unless he can command
that sum. The amount of capital required depends on a
great degree also on the quality of the land; very rank land
requires less capital in proportion to the rent than poor
land, especially if the poor land requires draining, chalking,
merching, before it will produce any tolerable crops. All
these circumstances must be taken into consideration before a
farm is taken.

When it is ascertained what extent of farm may be safely
undertaken with a given capital, the most important object
to be attended to is the condition and fertility of the soil,
and the nature of the crops which are to be cultivated on
it. It will be a discovery well worth the attention of modern chemists,
who have made such progress lately in the analysis of vege-
table substances, and who shall be inquisitive to farmers and
proprietors of land. In the mean time the nature of the
weeds which abound on the land will give some clue to the
state; and an experienced person will collect from various
minute appearances in the soil whether it has been fairly
managed or exhausted. It is in general more advantageous
to farm a farm in a district with a variety of soil, than with
one of similar soil which he is acquainted with. If he comes
from a district where the soil is sandy, and where clay is in request, he will give
the preference to a soil of clay loam; if he comes from a cold wet
clay, he will prefer the sandy; and the chances are, that if he
is not mistaken in his judgment, and finds it out when he has already
established his capital in a losing concern. Next to the nature of the
soil is to be considered the convenient situation of the farm,
the disposition of the fields, and the adaptation of the farm
buildings to the purpose for which it has been undertaken.
The roads, especially those which lead to neighbouring
towns, whence manure may be obtained, are a most
important object; and if there is water carriage, it greatly
enhances the value of the farm. The roads to the fields, and
the distance of these from the house. The farm must be
of having good pasture, or land easily laid down to grass,
and near the homestead, and especially the situation of the
farm-buildings with respect to the land, and the abundance
of market with the date at which the small stall is placed
will be considered, and which will greatly influence the
probable profits, and consequently the rent which may be
offered. A central situation is no doubt the most advan-
tageous for the farm-buildings, as greatly diminishing the
distance of carts and horses, and in agriculture, there may be circumstances which render some spot nearer
the extremity of the land more eligible, and it is only when
entirely new buildings are to be erected that there is a
choice. The old farm-buildings are generally in low
and inconvenient places, and are not adapted for the
purpose. It is by the care with which the manure is
spread on a farm, up a steep hill. The best situation is on a moderate
slope, neither in the lowest nor highest ground.

The disposition of the buildings is of great importance
both to the farmer and tenant. Good and tenant
buildings are inconvenient, and cost much in repairs. The
house should be neat and comfortable, fit for the residence
of a farmer who has a capital such as the farm requires.
The former must be well adapted to the airy and healthy, facing the south
with the fireplace, and a neat garden in front. In the farm
yard should be to the north, behind it. Near the house and
the farm yard there should be a small paved court separated
from the yard by a low wall. In this court, which should
contain the small stalls, the buildings are placed on
proper benches to air and dry in the sun. The architecture
of the buildings may be left to the taste of the proprietor
or his architect. The simpler it is, the more appropriate.
The yard or yards in a large farm should be sheltered on
the north with brick or stone houses, which should
be used formerly to be thought necessary. If there is a thresh-
ing machine, a single floor to thresh the seeds upon, and
to employ the men occasionally in winter, is quite sufficient.
Every farm which is so extensive as to require more
than a single machine for threshing must establish the corn
always to have a threshing-mill attached to it. [Barn.]

A small yard, distinct from the other, with sheds for
the cattle to shelter themselves under in wet and stormy
weather, is a great advantage, and may be added at a
reasonable expense to any set of farm-buildings. The cow-sheds
should be in the stack-yard, which properly occupies a space north
of the barn. There should be a sufficient number of stands
with proper pillars and frames to build stacks on. Each
yard is properly a stack-yard for the barn. There
are not many yards which are so well suited to
the purpose. The walls of the stack yard are
generally fixed and a bed of straw on bricks
is placed in the barn to be threshed out. The
round form, and the square which becomes nearly round when built up, are
the most convenient. Nine stone or cast-iron pillars with caps
er over them are placed on brick foundations, and support the
strongest of the frames. The bottom of the stack
there is usually a pyramidal open frame, to allow the
air to circulate through the stack, and prevent the heating
of the grain. On each side of the yard should be placed the
stacks, cow-houses, and feeding-stalls, with a pump, a supply
of water, and a drain, and convenient places for
urine, straw, and turnips in, with a machine to cut them. A great
deal of time and labour is saved by a proper arrangement of the
different parts of the farm-buildings. An underground
kitchen near the cow-house and stables, into which
the smoke and odours of the cow-houses by means of a sink
or drain, is a most useful appendage, which is too little
thought of in England, whereas it is one of the most
indispensable features of a farm-house.
possible parts of a Flemish farm. It supplies a kind of
masure, which can be applied to the land at all times,
which invigorates sickly crops, and may often produce an
abundant return, where otherwise there would be a com-
plete failure. There are many plans of farm-buildings
given in works on agriculture, which combine all that is
useful on a large scale. Most of these plans have been
created at a great expense for the farming establishments
of noblemen and men of large fortunes. They may be con-
sidered as the palaces of husbandry, where much is ex-
pended for the sake of grandeur. But the proprietor who
desires to erect buildings most proper for the occupation
of his land must study economy, and lay out no more in build-
ings than is necessary. They should be so substantial as
not to require frequent repairs; without unnecessarily in-
creasing the original expense of materials and labour. Light
thatched roofs are sufficient for the sheds and smaller build-
ings, and even for the cow-houses and stables; but the
waste of straw and the danger from fire should be set
against the cost of tiles or slate as a covering. The barn
should not be thatched, unless it can be done with reeds,
which form a durable and impervious covering, not sub-
ject-to be infested with rats. The house should always
be detached from the farm-buildings, and should have a
tiled or slated roof.

We here give a plan of plain farm-buildings for the occu-
pation of 200 or 300 acres of land, of which two-thirds are
arable, fit for turnips, barley, clover, and wheat. The farm-
house should have a large kitchen, two good parlours,
and five or six bed-rooms; a wash-house, with coppers to
brew; a scullery, and larder. The dairy should communi-
cate with the house, and with a small paved court, near
which are the pig-sties and the cow-house. There should
be two distinct farm-yards with proper sheds, and in each
there should be a cistern for the urine from the stables and
the drainings from the dung.

Buildings for a Farm of 300 acres

![Diagram of farm buildings](image)

For a small occupation, where the tenant is but a little
above the rank of a day labourer, a set of buildings all
under one roof, and forming the longer side of the yard,
which may have open sheds round it, such as is represented
in the annexed figure and plan, is at once convenient and
economical. If this building is thought too long, it can
very easily be divided into two, which may be placed at right
angles to each other and form two sides of a square. The
farm-house and cow-house might form one side, and the
stables and barns the other. This is the more common
distribution in Flanders.
Those two examples of farm-buildings will be sufficient to give some idea of what may be proper for farms of an intermediate size. A principal thing to be attended to is to have plenty of room for cattle; and where of farms remain much larger than is required according to the present mode of staking corn in the yard, they can be very advantageously converted into cow-stalls or ox-stables. Where many sheep are kept, it is of great advantage to have a sheep-walk, with low sheds and a wind, at the time when the ewes lamb, especially when the season is wet and chilly, which hurts them more than a dry frost. The second yard B (see plan, p. 197) is well adapted for that purpose; and an additional temporary shed against the partition which divides it in two will convert either division into an excellent sheep-yard.

In valuing the rent of a farm the inhabitant of the farmer is seldom taken into the account, and it ought not to be above the station of the tenant; but the buildings immediately connected with the cultivation necessarily add to the rent or diminish it, as they add to or diminish the profit.

The next important question is what may be a fair rent both to the landlord and the tenant. This depends as much on the mode of cultivation adopted as on the fertility of the soil. The tenant must have a fair interest for his capital, and a fair remuneration for his trouble. In the old system a third of the gross average produce was considered as a fair rent, including all the direct payments for the occupation of the land, such as tithes, rates, and taxes; another third was supposed to cover the labour and expenses of the farm and interest of capital; and the remaining third was appropriated to the maintenance of the farmer and his family, out of which he had to save whatever he laid by as a clear profit. But this calculation is no longer applicable to the present state of agriculture. The expenses are greatly increased, and the produce is also greater. It requires a greater capital, and more skill to manage a large farm. The tenant is a man of more liberal education, and his habits are more expensive. The occupier of 500 acres of land in England expects to live as well as a landowner of 500l. a year income. He cultivates better by applying more labour, and much of the produce is owing to his skill and his capital. He therefore expects a greater share of the produce than the landlord, not only to repay his outlay, which is greater, but to live upon. Supposing the tenant to have a capital employed equal to ten times the rent, which is often the case, the gross annual produce ought to be equal to five times the rent. This we shall distribute as follows: two-thirds for expenses, including rates, tithes, labour, and interest of capital at 5 per cent.; one-fifth for rent; one-twelfth for improvements and purchased manure, and three-tenths for the net profit of the farmer, out of which he is to live. This appears a less proportion than the old third; but it must be remembered that the produce is greatly increased. It will be found, wherever accurate accounts are kept of the management of a farm, that the proportions above stated are not far from the truth. It requires much judgment and experience to calculate what average crops may be expected by an improved mode of cultivation, and especially by increasing the number of cattle and horses maintained on the farm.

In Scotland it is notorious that rents are much higher than in England, not only for small occupations, but for extensive farms; and that the tenants have complained lists of the times than their neighbours in the south. It may be worth while to inquire into the cause of this, for the low price of corn must affect the Scotch farmer equally with the English. One great difference between the Scotch and the English farmer is, that the former gets work done at a cheaper rate than the latter. The Scotch labourer is fully as well fed, and clothed, and lodged, as the English; but he has less money to spend at the alehouse. He is paid not in a certain sum every Saturday, but in comforts, in the keep of a cow, in a certain number of rows of potatoes, a certain quantity of malt to make his beer, a cottage to live in, and a meal to feed his family. His immediate wants are supplied, and he is comfortable; the consequence is, that he works willingly. He has no remnant of the last night's debauch at the beer-shop. He is early at work, and he does his work cheerfully. The horses of a Scotch farmer are well fed; they are always in good condition. They work ten and even twelve hours in a day at two yoinkings. The ploughman only thinks how he shall finish his work in proper time, and unless he makes the horses work as much as they can without distressing them, he knows he shall not get through his work. All this is worth 25 per cent. on the whole labour of the farm, as Arthur Young has very judiciously calculated, when he gives the expense of labour on the farms of a gentleman, compared with that on the land of a farmer who works with his own hands. (See Farmer's Guide.) The moral effect of an interest in the work to be done, when opposed to that of a perfectly distinct and often hostile interest, will readily account for so great a difference.

But besides this the Scotch farmer has generally the advantage of a scientific education, and of a thorough knowledge of the principles of his profession; and with the shrewdness peculiar to his country, he knows how to take advantage of every favourable circumstance. He has also been taught to calculate, and will soon discover where there is a profit or a loss. This has made him turn his attention to cattle and sheep of late years, more than to the production of corn; and the Scotch have found, that while a very
decent profit was made on the cattle, their land produced more corn, although it sold at a lower price; for the green crops raised for the cattle, and the manure made by them, each useful farm if the what an value, himself.

The price of agricultural produce throughout Great Britain and Ireland is brought very nearly to an equality, and it is uncertain to what extent certain advantages might confer in any proportion with respect to the actual price of labour; and before a fair rent could be calculated, it was necessary to consider how much of the value of the labour was paid directly, and how much in the shape of rates. Our northern neighbours were free from this uncertainty.

Farm Accounts.—In proportion as the management of a farm requires more skill, and the various operations become more complicated, so the necessity of great accuracy in the accounts becomes more evident. The manner in which farm accounts should be kept deserves therefore particular attention.

Many farmers, who are not devoid of intelligence, and who are anxious to ascertain their gain or their loss in cultivating their land, have thought of means of ascertaining this than the balance of their account of receipts and expenditure. If they have separated the accounts of their private establishment from that of their farm, they think that they have done all that is required, and that the profit or loss will become a matter of course. But they would hesitate in saying that he kept no regular accounts. He had no greater stake than the farmer; and his transactions were perhaps less varied; if he kept no clerk, he should have attended better to the accounts himself. And if a man who has a floating capital of 2000L. does not think it worth his while to employ a clerk to keep his accounts, not having time to do so himself, it is no great wonder if ill success is the result. It is not sufficient, nay, it is not necessary, that all these accounts should be as simple as possible, so that any one can keep them. So are merchants' accounts at first sight. Nothing is simpler than to put down what is bought and sold, what is the profit on each transaction, and the sum of all the sums. But this simple account is the contents of many books, many entries, many checks, and consequently many clerks are required. In a lesser degree this is true in a farm. It is easy to know what is bought and sold; what is expended or produced; but it requires very minute accounts to ascertain what part of the farm gives a profitable return, and what is the cause of the loss. There may be a profit on the crops and a loss on the stock, or rice vended. The money expended on improvements or advantageous measures may have produced an increase which is proportionate to the outlay, and which affords a good interest; but it may also be a decided loss. How is this to be ascertained, except it by accurate accounts? The expense of keeping accounts is much overrated. A clerk who has his head and 20L. a year generally a young man who has some education. He is useful in seeing that the operations ordered by the farmer are duly executed. He is a trustworthy overseer, and, as he has his accounts in his thoughts, he is most likely to detect the cause of any loss, from whose shoulders that loss can be detected. In the same way he is the most likely to discover the frauds of agents; his eye is more carefully trained so as to know its value, there is no system of accounts which can be compared with the well-known method of double entry, as it is called, which is of Italian invention. The principle of this method is so simple, that the slowest arithmetician cannot be confused by it, and it is so perfect that no errors can escape its scrutiny. As applied to agricultural accounts, which are simple in their nature, it becomes so clear, that they can be applied with certainty, and with advantage, a propos of this subject, and we consider the great full of rents in England since the peace.

The price of agricultural produce throughout Great Britain and even Ireland is brought very nearly to an equality, and it is uncertain to what extent certain advantages might confer in any proportion with respect to the actual price of labour; and before a fair rent could be calculated, it was necessary to consider how much of the value of the labour was paid directly, and how much in the shape of rates. Our northern neighbours were free from this uncertainty.

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should be kept exactly as that of a mercantile man, and be frequently balanced to ensure correctness. This is a thing which cannot be too strongly recommended to young farmers.

While a farm has been agreed for as far as rent is concerned, there are always conditions in a lease, which is of great importance to the farmer to understand fully. It is necessary that the landlord should have some security against the wilful deterioration of his land by a dishonest tenant, and therefore two things are too often insisted on, namely, securing the exact mode of cultivation without giving the tenant sufficient scope to try improved methods, which may ultimately be highly beneficial to all parties. If the landlord can ensure that the protection of manure is done on a sufficient scale, and that it shall be well tilled and kept free from weeds, he need not have any other protection, unless it be for two or three years or the lease, when the tenant might be induced to over-crop the land, and thus exhaust it.

In entering on a farm there is often a heavy demand on the incoming tenant for work done by the predecessor, for a supposed remainder of manure, and various other items, which are usually settled by reference to the custom of the country. Some general rule is required to regulate all these demands, which are often exorbitant, and cripple the incoming tenant in his capital. It is just that an outgoing tenant should be repaid for any permanent improvements he has made, and if he has not made the whole advantage, and that he should be encouraged to keep up the proper cultivation of the land, so that the incoming tenant may be able to continue the regular course of work. But this he will not do, unless he expect to be remunerated. On the other hand, it is also just that an incoming tenant should not pay for work slovenly done or for supposed remains of manure which do not exist in the land. We have known instances where the valuation of all the items to be paid for by the incoming tenant greatly diminished his capital and crippled his operations for several years. There should therefore be a separate stipulation on this head before a farm is finally hired.

FARMER, Dr. richard, descended from a respectable family in Leicestershire, was born at Leicester, August 24, 1758, and received the early part of his education in the Free Grammar School of his native town, and in 1772 was entered a pensioner of Emmanuel College, Cambridge. He appears to have been little influenced by the overbearing tendency to mathematical study which existed and still exists in that University, and, after his degree, took no interest in pursuits of that nature, farther than was necessary for the purposes of college tuition. In 1780 he became Classical Tutor of Emmanuel College, which office he held until his election to the mastership of the College in 1772. He served in the office of Vice-Chancellor of the same year, and in 1778 was elected Chief Librarian to the University. In 1788 he was collated to a prebendal stall at Lichfield, and some time after was appointed Prebendary of Prebury, which he resigned in 1798 for the office of a Canon Residentiary at St. Paul's. He died after a long and painful illness, at Emmanuel Lodge, Sept. 8, 1797, and was buried in the chapel. An epitaph to his memory was written by Dr. Port, and is inscribed on the college clusters. Dr. Farmer collected a valuable library of treatises and early English literature, which was sold after his death and produced, as it is said, a great deal more than it originally cost.

Dr. Farmer's constant residence at Cambridge is said to have procured for him an early education; a cause perhaps more productive of resident fellows than any other. His political principles were inclined to Toryism, and he appears to have been attached to that party in the church which goes by the name of "orthodox." His manner was ceremonious and unapproachable, and his habits rather those of a boon companion than of a clergyman. It is reported of him that he declined a bishopric rather than forego his favourite amusement of seeing Shakspeare performed on the stage, and which, if founded on a mere fancy, had at all events more cogency in the time of Garrick than at present.

Dr. Farmer is celebrated, and justly so, for one single work, his "Essay on the Learning of Shakspeare," which, in our opinion, surpasses anything of the kind written in English. It contains the best criticisms on the most valuable part of Shakspeare, and is of itself a just compensation. The mixture of gold and rubbish which is generally appended as notes to every edition of Shakspeare contains so little of the former element and so much of the latter, that it is not easy to estimate such commentaries as Dr. Farmer's above their true value; indeed, if we had to choose from all Shakspeare's voluminous annotations what appears to us most deserving of study, we should have to select this work. For as Englishmen, we place Coleridge's 'Lectures' and Dr. Farmer's 'Essay,' work which are, and intended to be, entirely dissimilar, but which, more than any others, come up to our notion of a commentary on Shakspeare.

FARMERS GÉNÉRAUX, was the name given in France under the old monarchy to a company which farmed certain branches of the public revenue. It is that to say, contracted with the government to pay for the revenue the treble of the yearly sum, and was entitled to receive the equivalent of certain taxes as an equivalent. The system of farming the taxes was an old custom of the French monarchy. Under Francis I., the revenue arising from the sale of salt was farmed by private individuals in each town. This was and is still in France, the practice of Europe a monopoly of the government. The government has alone the right of providing the people with salt, and it collects its stores, and sells to the retailers at its own price. This monopoly was first assumed by Philippe de Volp in 1596. Other sources of revenue were likewise farmed by several individuals, most of whom were favourites of the court or of the minister of the day. Sully, the able minister of Henry IV., seeing the dilapidation of the public revenue by the tax farmers, who were, as a rule, unscrupulous, by the people, only 30 millions reached the treasury, opened the contracts for farming the taxes to public auction, giving them to the highest bidder, according to the ancient Roman practice. By this means he greatly increased the revenue of the state, but several of these tax farmers or briling was renewed under the following reign: Colbert, the minister of Louis XIV., called the farmers of the revenue to a severe account, and by an act of state deprived them of their enormous gains. In 1721, after the revolution, the system of contracts was abolished, and a new one established in 1722. But the system of contracts was renewed for the court, the ministers, and favourites were all well disposed towards them, as private bargains were made with the farmers, generally by which they paid large sums as ducences. In the time of Neecker, the commissioners in the king's name, who paid a rent of 186 millions of livres, and Neecker calculated their profit at about two millions yearly, no extraordinary sum, it appears. But independent of this, there were the expenses of collection, and a host of middlemen, such as the factors, the agents, the carriers, the carriers, the farm brokers, and the middlemen, who paid a rent of 86 millions of livres, and Neecker calculated their profit at about two millions yearly, no extraordinary sum, it appears.

But the rule was not alike all over France; in some provinces, which enjoyed certain privileges, salt was nine times the 100 weight, whilst in others it cost 16, and in some it cost 24. In some provinces the quantity required to purchase the salt was doubled in money, and in some as many as nine pounds. And yet the provinces, nay the individual families of each province, were prohibited under the severest penalties from accommodating each other's wants and buying the superfluous supply of their neighbours, who wanted more salt than their own allowance, and obliged to resort to the government stores. Besides, even a single article of provisions that was exported from one province to another was subject to duties called Traites. Every article of provisions had to pay a tax, and yet the same article exported from a province to another paid no tax at all. It appears, therefore, very strange that the king a certain sum according to the nature of the trade, and afterwards a much larger sum on his admission to practise his trade as a master. These few instances may serve to convey an idea of the spirit of tax farming in France. It is true the whole system of the time was not as bad as this, but the picture of the whole system is given in Breton's Histoire Financière de la France, 2 tols. 8vo., Paris, 1827. To farmers general, as the agents of that system, coming in
immediate contact with the people, drew upon themselves a proportionate share of popular hatred. But the revolution swept away the farmers general, and put an end to the system of farmering the revenues: it equalized the duties and taxes all over France; but the chief staple of the salt and tobacco has remained, as well as the duties on provisions, cattle, and wine brought into Paris and other large towns, and the right of searching by the octroi officers, if they think fit, all carriages and individuals entering the barriers of the city.

The system of farming the taxes, although generally disapproved of, is still continued in some European states. Not many years ago the custom-house duties at Naples were farmed by private speculators. For the character and effects of the system see Necker, De l'administration des finances.

FARNABY, or FARNABIE, THOMAS, a learned critic and grammarian, was born in London in 1575. His grandfather was of Truro in Cornwall; but his great-grandfather, an Italian, was the first of his family who settled in England. He was admitted to Merton College, Oxford, in 1590, in the station of a servant; but being of an unsettled disposition, he quitted the university abruptly, changed his religion, passed over to Spain, and was received into the professed members of the Jesuits. Growing weary of the discipline of the Jesuits’ institution, he did not stop very long with them, but in 1593 joined Sir Francis Drake and Sir John Hawkins in their second voyage to the coast of Peru. He was appointed subsequently as a soldier in the Low Countries. Gaining no profit in these expeditions, he returned to England, landed in Cornwall, and in the urgency of his necessities descended to the humble employment of teaching children their born languages. He compiled a grammar of Thomas Bainrafe, the grammar of Farnabie. After some time he changed his residence to Martock in Somersetshire, where he established a grammar-school for youth with great success, under his own name. From Martock he removed to London, and opened a school in Holborn, Red cross street, near Cripplegate, where his reputation became so established, that the number of his pupils, chiefly the sons of noblemen and gentlemen, amounted at one time to more than 300. Antony J. Wood says, his school was so flourishing that the chapel was finally issued from it when from every school taught by one man in England. Whilst here he was created M.A. in the University of Cambridge, and on the 24th April, 1616, was incorporated in the same degree at Oxford. In 1636 he quitted London, and retired to Martock to rebuild his house which he had resigned by his desire, and, with the wealth which he had accumulated, purchased landed property both in Kent and Sussex. In 1641 he became mixed up in the commotions of the time as a sufferer of the royal cause, and was for a while imprisoned in the Tower. He was afterwards in prison, first in Newgate, and afterwards in Ely House. It was at one time debated in the House of Commons whether he should not be transported to America. Wood mentions that some of the members of both houses who had his interests, among those who urged his being treated with severity, he died on the 12th of June, 1647, and was interred in the chancel of the church at Seavoncks.

His works were—1. *Index Rhetoricus Scholae ab omnem notabatur,* 12mo. Lond. 1620: to which in 1646 were added *Formulæ Oratoriae et Index Poeticus:* the fifth edition was printed in 1634. 2. *Florilegium Epigrammatum Graecorvm, eorumque Latino versus a varios redactum,* 4to. Lond. 1634. 3. *Phrasesologia Anglo-Latina,* 8vo. Lond. 1634. 4. *Tabula Linguum Graecae,* 4to. Lond. 1634. 5. *Synaxa,* 8vo. Lond. 1634. 6. *Notae de hist. et moribus, see Amst. 1632,* 6mo. 7. *Notae de histor. et moribus, see Amst. 1632,* 6mo. 8. *Notae de historia et moribus, see Amst. 1632,* 6mo. 9. *Notae de historia et moribus, see Amst. 1632,* 6mo. 10. *Three notes on the church of Constantinople* during the fourth comedy when he died; but Dr. Meric Casaubon completed the two last comedies, and published the whole at London, 12mo. 1651. Other editions were 1659, and 1671. Dr. Bliss, in his additions to Wood’s Athenae Oxoniienses, has lately intended an edition of Petusina's Satyricon.' (Biogr. Brit. Kippis’s edit. vol. v. p. 622; Wood’s Ath. Oxon. last edit. vol. iii. col. 213-216; Biogr. Universelle, tom. xiv. p. 168.)

FARNESE, the name of a noble family of modern Rome, who were originally the vicars of the territory of Farnese and Montalto, in the Papal States, south-west of the lake of Bolsena, and near the borders of Tuscany. The splendour of this family was greatly increased by the exaltation of Cardinal Alessandro Farnese to the Papal See after the death of Clement VIII, on 16 October, 1534. This Pope had a natural son, Pier Luigi Farnese, whom he determined to make a sovereign prince. For this purpose he first of all alienated part of the territory of the church in the neighbourhood of the feudal domain of his family, and formed a duke of Farnese, under the title of Duke of Castro, as a great duchy of the Holy See. He also obtained for him from Charles V. the investiture of the Marquisate of Novara as an imperial fief, and from the Venetian Senate permission to be inscribed on the golden book of the patricians of Venice, an honour considered as equal, if not superior, to that of the Jesuits. He also established in his son Gonzafonseca, or Captain General, of the Holy See, an office which Pier Luigi dishonoured by the most depraved conduct. Lastly, Paul III. in 1545 gave his son the investiture of his dukedom. Pier Luigi conquered, with the title of sovereign duke of those states, on condition that the duke and his successors should pay an annual sum of 8,000 ducats to the Roman See. The emperor Charles V., however, who, as Duke of Milan, had bought the dukedom of Farnese, reduced his son to the status of a vassal, and Pier Luigi undertook to pay a yearly rent to his former master, the Duke of Parma. The new Duke of Parma and Piacenza soon became hateful to his subjects for his vices and oppression, and a conspiracy was formed by Count Anguissola and other noblemen, secretly counseled by Don Ferrante Gonzaga, and largely encouraged by Pier Luigi. On the morning of the 18th September, 1547, Anguissola stabbed the duke while at dinner in the ducal palace of Piacenza, and threw his body out of the window, when it was mutilated and dragged about by the mob. By this act the dukedom of Farnese was completely dethroned and alienated from its first family, and Parma remained in possession of Ottavio Farnese, son of the murdered duke. In 1556, Philip II., as sovereign of the Milanese, restored Piacenza to the Duke of Oporto, but the citadel continued to be garrisoned by Spanish soldiers. In 1560, Philip II. gave the dukedom of Farnese to Piacenza, and Piacenza by his son Alessandro Farnese, who distinguished himself as general of the Spanish armies in the wars against France. He was made governor of the Spanish Netherlands by Philip II. for life, and was created Duke of Parma and Piacenza in 1572. He is known in history by the name of the Duke of Parma. Alessandro died in 1592, and was succeeded by Ranuccio Farnese, a suspicious and cruel prince. A conspiracy was hatched against him at Rome, but it being discovered, 12 men were arrested from that plot. By this death of the Duke of Parma, which pope wished to take away from him to give it to his own nephews, the Barberini. This gave rise to an absurd and tedious warfare between the papal troops and those of Parma. Ultimately, through the mediation of other princes, the Farnese were left in possession of Castro, but under the following pontificate of Innocent X. they were finally deprived of that territory in 1650, and the pope razed the town of Castro to the ground. Farnese afterwards received the assistance of his bishop having been murdered by some assassins. This occurred under Rancucio II. Farnese, Duke of Parma, who had succeeded Odoardo. The Farnese continued to reign over Parma and Piacenza till 1735, when the dukedom of Piacenza being left without issue, the main line of the Farnese became extinct. But Elizabeth Farnese, wife of Philip V. of Spain, claiming the duchy for her children, it was ultimately given, by the peace of Aix-la-Chapelle, to her brother, Don Carlos, king of the Two Sicilies, and some of the finest statues and paintings in the museum are the property of this house. The other fiefs, however, and the personal property of the Farnese, including the rich museum and the splendid palaces at Rome, were given to his brother, Don Carlos, king of the Two Sicilies, and some of the finest statues and paintings in the museum are the property of this house. The Farnese palace at Rome, which belongs to

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Municipal to good governed cwt. general After The about tho two ib great longed. It of the FARR OF FARO, FERRO, or FARORNE ISLANDS, a group twenty-two in number, seventeen of which are inhabited; they are about 300 miles west of the coast of Norway, and about 200 north-west of the Shetland Isles, between 61° and 63° N, lat., and 8° and 6° W. long. They were discovered by Sir Edward Parry in the time of Harold Harfager, king of Norway, and at present belong to Denmark. Their whole area is estimated at about 494 square miles, and the population at about 5500.

These islands mostly consist of steep rocks, some of them rising very high, and the largest peak, Storomoe, 3000 feet high. The inhabitants are of Norwegian (or Swedish) descent, and speak the Norwegian language with a Danish accent.

They have in general handsome features, and are well made: those of the northern are taller, and have more islands. They are handsome, reasonable, honest, hospitable, and simple in their manners. Their number in 1769 was 4775.
Beaux Night, During Farringdon singular the gentleman was fortieth, he was so deeply affected that he fell into a decline, and died in 1707. During his last illness he wrote his celebrated Beaix Stratagem.

The appearance of Farquhar's comedies may be regarded as an important epoch in the history of the English drama. None of his celebrated predecessors bore any resemblance to him; he was the first of his period to write in an easy flowing style, equally removed from the pedantic stiffness of Congreve and the exaggerated bombast of the Etridge school. Immoral and licentious as his plays may appear to readers of the present day, those who are conversant with writings of that time must acknowledge them considerably more pure than those of his contemporaries, if we except the first piece 'Love and a Bottle.' Let any one who is disposed to be severe upon Farquhar cast his eye for a moment over the gross works of Wycherly, or the obscene and filthy trash of Mrs. Behn; let him compare Tharaud's 'Harry Wildair with the cold-blooded and brutal Dormant, held forth by Etridge in the 'Man of Mode' as a model of what a gentleman should be, and then he will measure the former by a right standard. Farquhar attended more especially the character that he his老爷 has abounded with a variety of names talking in appropriate language, while the persons of Congreve's drama were but an assembly of professed wits, and those of Etridge and others were only rakes, city dupes, unfaithful wives, and women of the most depraved character. The nobler events their pieces were marked by only one distinction of character, that between the injurer and the injured, the former of whom was held up as a clever personage, and the latter made to talk like a fool.

The critics regarded as Farquhar's chef d'œuvre a serious comedy called the 'Twin Rivals,' which has now sunk entirely into oblivion, or at best is only remembered by readers of the old English drama containing a manly though disguising portrait of a character, under the name of 'Twin Rivals.' A next edition of his works was published in 1736.

FARRANT, RICHARD, one of the highly-venerated fathers of English church music, was born in the early part of the sixteenth century. He was the son of the chapel-royal in 1564, and subsequently organist and master of the choristers of St. George's chapel, Windsor. His death is supposed to have taken place about the year 1585. So long as a solemn harmony of the purest and finest kind shall be maintained in church music, Richard Farrant shall be held in especial his two anthems, 'Hodie nolite trahere fac,' and 'Call to remembrance,' be productive of the most delightful emotions that can arise out of a love of art combined with religious feeling.

FARRINGDON, a town in Berkshire, in the hundred of Farringdon, and in the parish of Great Farringdon. It is pleasantly situated on aeminence, 36 miles north-west by west from Reading, and 624 miles west by north from London. It is governed by a bailiff and inferior officers. The market-day is Thursday. There are three annual fairs, viz., on Old Candlemas-Day, Whitson-Tuesday, and 29th October, besides a statute fair on the 18th October for hiring servants. The Saxon kings had a palace at Farringdon, wherein Edward the Elder died in 925; and a castle was founded here in the time of Stephen, son of the earl of Gloucester, or his son, but was totally destroyed a few years after by Stephen. In 1202 this king founded at Farringdon a priory of Cistercian monks, subject to the monastery of Beaulieu, and Prince Edward was consecrated at the priory, like the castle above mentioned, has long since been entirely ruined, and no vestige is left of either of them. During the civil war Cromwell made an attack upon the town, which was successfully resisted by the garrison, who were under the command of Lord Stanhope. The monastery is commemorated by an inscription in the parish church, King Charles I. of England, died here in 1649. At the second battle of Newbury. Near Radcot Bridge, about 20 miles from Hereford, is a large and magnificent oak, called St. Thomas's Oak, which has been made famous by its connexion with the cause of the Puritans.
three miles to the north of Farringdon, was fought the battle between Robert Vere, duke of Irelond, and the earl of Derby, afterwards King Henry IV. The parish church, which is dedicated to All Saints, is a large and handsome structure in the Gothic style, and contains many old monuments, brasses, and tables of marks of Berks and Wiltshire (Lond. 1719). It has a low square tower, formerly surmounted by a spire, which was destroyed during the civil war. The vicarage is in the diocese of Salisbury, and its average net income is 25s. The parish of Great Farringdon was early the hundred of Farringdon and part of that of Shrivenham. According to the population returns for 1831, the entire parish contained 3033 inhabitants, and 6910 statute acres. (Lyons' Magna Britannia; Carlisle's Topographical Dictionary; Ashmole's Antiquities; Escorial, vol. 2, sect. 5.)

FARS, or FARSISTAN. [Persia.]

FARTHING. [Money.]

FARTHINGALE, or VARDINGALE, a hoop, a circle of whalebone formerly worn by ladies to spread the petticoat to a wide circumference. Strutt, in his 'Manners and Customs,' vol. iii. pp. 84, 86, tells us that among the men, early in the reign of Queen Elizabeth, the wearing of great breeches was carried to very absurd and ridiculous lengths; and that the ladies, that they might not be behind-hand with the gentleman, invented the large hoop or farthingale as a companion to the trunk-hose or breeches. The farthingale afforded the ladies a great opportunity of displaying their jewels, and the other ornamental parts of their dress, to the utmost advantage, and for that reason often went through the closer habit and the more simple imitations of nature.

Bulwer, in his 'Artificial Changeling,' says, when Sir Peter Wych was ambassador to the Grand Signior from King James I., his lady was with him at Constantinople; and when, on returning, having heard much of her, desired to see her; whereupon Lady Wych, accompanied with her waiting-women, all of them neatly dressed in their great farthingales, which was the court-dress of the English ladies of that time, threw themselves upon her knees. The sultaness received her with great respect; but wondering much at the extension of her hips, inquired if that shape was peculiar to the women of England; to which the lady replied, that the English women did not differ in shape from those of other countries; and, by explaining to her the nature of the dress, convinced the sultaneess that she and her companions really were not so deformed as they appeared to be. (Strutt's Habits of the People of England, vol. ii. pp. 259, 260.)

The farthingale however, if not then, was at least subsequently, when large hoops were worn by the English ladies in the reign of Queen Elizabeth, and afterwards, and the ladies of the south of France, which was known by the name of House-out; see Corlgasse. Lascells, in his 'Voyage of Italy,' 12mo., 1655, p. 96, says, 'I found all the great ladies here to go like the damos of Spain in armilliariants, that is, in horridly overgrown verticals of whalebone.' Likewise, in De Dcases, 4to, vol. iv. p. 144, notices the strangeness of those worn by the ladies who came over from Portugal with Charles the Second's queen. The hoop, the last remain of the farthingale in England, went out at the beginning of the reign of George IV.

FASCICLES. [Consult DICTIONARY.]

FASCICLE, in botany, is, strictly speaking, that kind of inflorescence in which the flowers are arranged in a flat-headed raceme or corymb, and begin to expand in the centre sooner than at the circumference. The term is however constantly applied to any collection of flowers or leaves in clusters at the end or on the sides of a branch; thus the leaves of the larch are called fascicled.

FASCIULARIA. [Macrophyllaca.]

Fascicularia bigelovii, a species of wild tobacco, employed chiefly for the purposes of reveting the epaulets of batteries and covering the roofs of field-magazines or other outbuildings, but occasionally to increase the heights of trench parapets, and to make temporary roads over nearly grown ground, or in any other place placing the fascines in a cradle made of trestles, and compressing them by means of two levers connected by a chain, which is passed round the bundle: the whole is secured by wights or binders, which are usually 18 inches asunder. Fascines are commonly composed about 8 or 9 inches in diameter, and, when made, are 18 feet long; but they are then, if necessary, cut by the saw into parts of any required lengths, which are generally 6 feet or 12 feet. A fascine of the longest kind is sometimes called a succassin.

When fascines serve for the reertainment of a battery, they are usually laid horizontally, one line above another, against the interior slope of the epaulement, to which they are attached by pickets driven through them into the earth.

FASCIOLA RIA. [Siphonostomata.]

FAT, abstinence from food, more particularly used for such abstinence as is a religious observance; from the Anglo-Saxon festan.

Religious fasting has been practised in almost all ages and all countries. Moses appointed that of the Day of Expiation for the Jews; but the ancient Romans did not give us details of the Egyptian fasts. Among the monarchs of the primitive Christians, the greatest was that of Quadra-gemina, or Lent: but they likewise observed the Iujens quatuor temporum, or fasts of the four seasons.

The Romans appointed those in England being fasts are, first, the Forty days in Lent; second, the Ember days at the four seasons, being the Wednesday, Friday, and Saturday after the first Sunday in Lent, the Fast of Pentecost, September 14th, and December 13th; third, the three Rogation days, being the Monday, Tuesday, and Wednesday before Holy Thursday; fourth, all the Fridays in the year except Christmas-day. The 30th of January is observed as a fast, in repentance for the execution of Charles 1.; and other days of fasting are occasionally appointed. The fasts of Ash Wednesday are appointed a fast on the last Wednesday of every month. Lewis, in his Antiquities of the Hebræo Republic, has given from Maimonides many particulars of the Jewish fasts, for which the reader may also consult Ockley's translation of Seder 'Oletheth,' Israel's History, vol. 1, pp. 37, 1707, p. 150, and D. Lev's Rites and Ceremonies of the Jews, 5vo., Lond., pp. 70, 71, 85, 120, 125. For these of the Greek church he may consult Leo Alliatus, De Excellentia sacri mensae, vol. 1, pp. 1, 1709, and The Present State of the Greek and Armenian Churches, Anno Christi, 1678, 5vo. Lond. 1679. For the Mohammedan fasts, Reland De Ritualis Medemmedica, 5vo. Tr. S. Rh. 1717, ca. x. and D'Herbelot's Bibliothèque Orientale, Tome III. 1688, pp. 80, 81. The fasting days in the present church of Rome will be found in Bishop Calloper's Garden of the Soul.

FASTI were marble tables at Rome, on which were inscribed the names of the consuls, dictators, censors, and other principal magistrates of the republic. Fragments of these tables have been collected, and are ranged along the walls of one of the halls in the palace of the Conservatori on the Capitol. The deficiencies in the series of the consuls have been supplied by means of the historians, and by consultation of the tables of Fasti which exist in the Vatican Library, and in modern times have compiled Fasti, or chronological tables of the Roman consuls. Among the most learned and accurate of these compilers is Sigonio of Modena, who published a Fasti Consularium, or triumphi acti Romanae regae ad Titum Quinctium annum, in fol. 1709, the 'de nominibus Romanorum,' a work of great erudition and acute criticism. Piglius published 'Annales Magistriatuum et Provinciarum S. P. R. ab Urbe condita,' fol. 1599. Laube, in his 'Bibliotheca Nova,' published Fasti 'Consularium' of a MS. of the college of Clermont. Other editions of the Fasti have been made from various sources. Between these lists occasional discrepancies occur as to the names of some of the consuls, and the particular years of their consulship. These differences in the lists of the antiquarians, there is still some uncertainty about Roman chronology. The word Fasti is often used as synonymous with the annals, or chronicles of a nation.

The Romans had another kind of Fasti, which they called 'Fasti de sincris,' a kind of happy chronicles in which were registered the periodical festeasts, games, official days for business, &c. Ovid wrote a poem explanatory of these Fasti, which he dedicated to Germanicus, and in which he relates how the festeasts, all of the most splendid, were either happy or calamitous and varied with the various days of each month. The poem, as we have it, is in six books, one for each of the first six months of the year; the rest is unfortunately lost.

Fasting. [Abstinence.]

FAT. This substance varies in properties according to the animals producing it; in all cases however it is composed of two different kinds which differ as to their melting point; these are termed olein or elain and stearin. It is not however to be considered that the substances to which these names
FAT

as given are in all cases absolutely identical; they vary as to

rancid taste, solubility in alcohol, &c., but all fats agree in

being insoluble in water, and in not containing any azote,

which is a common constituent of most other animal matter.

It has not been decided whether the differences which exist

in the properties of the various kinds of olein and stearin are

derived from a real difference in their elementary composition,

or are owing to an admixture of substances which have

not as yet been separated from them. Chevreul has however
taken a position in favour of the latter opinion and has

shown that the stearin of the latter yields a colourless

toluene which is perfectly similar in all its properties to the

former does not give a trace of it. This pecularity may be

explained by supposing the presence of another kind of

stearin, which has not hitherto been separated. Olein and

stearin may be separated by dissolving the fat in hot alco-

hol from which when stands and separates on cooling:

seven-eighths of the fluid are then to be distilled, and, on

adding water to the residue, a mixture of a large quantity of olein

and a small portion of stearin is precipitated; when this is

treated with cold alcohol of sp. gr. 0°55, the olein is dissolved

by the alcohol, while the stearin remains; by distillation of

the olein and stearin are separated and the olein remains. We shall now notice the difference existing in the properties of some of the more remarkable kinds of fat.

Stearin fat varies but little according to the part of the

body producing it; that from the region of the kidneys, after it has been melted, is yellowish and inodorous; it begins to

crystallise at 26° Fahr., and is solid at 64°; it dissolves in

forty times its weight of alcohol of 0°921 when

beaten with a pestle on cooling, in less than one hour; its pressure in birefringent paper at 78°, is colourless, fusible at

125°, and may be cooled to 102° before it begins to congeal;

its temperature, on account of the evolution of latent heat,

then rises to 126°; 2° 5 parts of this stearin are soluble in 100 parts of alcohol; the greater part of which separates in acicular crystals on cooling.

The olein of human fat is a colourless oily sweetish fluid, and

remains so at 40°; at 60° its specific gravity is 0°913; 13

3 parts of this olein are soluble in 100 parts of boiling oil;

the remainder becomes sublimate.

Or fat. — When this has been fused it begins to solidify

at 98°, and the temperature then rises, for a reason already

mentioned, to 102°. Forty parts of boiling alcohol, of sp. gr.

0°913, dissolve one part of it; and it contains about three-

fourths of fatty acid; it is a transparent liquid of the slightest

green, and of a granular crystalline texture; it fuses at

about 112°, and may then be cooled to 102°, when, on con-

gealing it rises to 112°. It burns like white wax. Of this

stearin about 15° 5 parts are dissolved by 100 parts of anhy-

drous alcohol.

The olein of ox fat is colourless, nearly inodorous, and its

specific gravity is 0°913; boiling alcohol dissolves nearly

fourth more than its weight.

Egg yolk (or Mutton suet) greatly resembles that of

the ox; it is, however, less tenacious of exposure to the air requires a peculiarity.

After fusion it congeals at a temperature

varying between 98° and 102°; it dissolves in 44 parts of

alcohol of sp. gr. 0°921. The stearin is white, translucent, and

afters fusion but imperfectly crystalline; about 16 parts are

dissolved by 100 parts of boiling anhydrous alcohol; the

olein of mutton suet, is colourless; its specific gravity is

0°913; and 80 parts of it are dissolved by 100 parts of anhy-

drous alcohol at 106°.

Beef lard, is a soft colourless solid, which fuses

between 78° and 86°; its specific gravity at 60° is

0°938. By powerful and long continued pressure at 42°,

between rolls of blotting-paper, it is staled to yield its

weight of colourless olein, of specific gravity 0°915; of this,

large quantities are obtained, and from it, by the action of

baker's lard is inodorous, solid, and granular, which, after

fusion, remains liquid down to 100°, and then on congeal-

ing the temperature rises to 109°. It becomes acid by

exposure to the air.

Goat's fat contains a peculiar fat, termed by Chevreul

hirinon, and to the presence of this its peculiar odour is

attributed, and which remains to a great degree with the olein

when this is separated from the stearin; by particular

means this fat yields hirone acid. (Hirine Acide.)

The fat of birds. — Goose fat is colourless, and of a pecu-

liar taste and smell; after fusion it congeals at 80° into a

soft solid of the consistence of butter. When subjected to

birefringent paper to pressure at 36°, 100 parts are separable

into 68 of olein, and 32 of stearin, fusible at 112°; the fat

of ducks fuses at 76°, and yields 72 olein, and 28 stearin,

fusible at 120°; turkey's fat is separable into 74 olein and

26 stearin, fusible at 112°.

The fat of insects has been but slightly examined, and

does not offer any very remarkable properties: the fluid

fluids of many constitute the insecta, and which are

unusually termed oils, will be considered under that branch.

The olein and stearin of animal fats are highly useful and

important substances in the manufacture of soap and

candles; for the latter purpose stearin has been of late very

advantageously employed and to a considerable extent as a

substitute for wax.

The subjoined analyses of the stearin and olein of mutton

fat may be taken as examples of the general constitution of

these substances, and will show that their composition is

very different from that which might be expected from their different

properties:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Hydrogen</th>
<th>Carbon</th>
<th>Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stearin</td>
<td>11°770</td>
<td>78°776</td>
<td>9°454</td>
</tr>
<tr>
<td>Olein</td>
<td>11°090</td>
<td>79°354</td>
<td>9°556</td>
</tr>
</tbody>
</table>

FATA MORGANA, a name of uncertain derivation given to a very striking optical delusion which has been principally remarked in the Streat of Messina, and on the coasts of Sicily and Calabria. It has been differently de-

scribed by different observers, which we may attribute to the different states of the atmosphere at the periods of the respective observations. The indications both of the hy-

trometer and thermometer should have been carefully

noted, in order to obtain a precise explanation according to the

known laws of optics.

The images of men, of houses, &c. are occasionally seen

from the coast, and sometimes in the air, or at the surface of the water, and sometimes floating above the surface of the water, and would equally

accompany any real object, as a ship, under the same cir-

stances. (Mirage.)

The remarks of Minnasi, which have been so often copied, in explanation of this phenomenon, are unworthy of attention.

FATALISM. This term is used to express an article of

philosophical religion, and usually signifies that the suc-

cessive actions of mankind, and even the success of opera-

tions of the powers of nature, are under the guidance of some

superior almighty power, so that these successes and the

actions themselves are entirely independent of each other.

This doctrine has been embodied in all religious

systems, though in different forms, and is the basis of

the governing power. The Greeks called it moira or

avantes, and the Romans called it fate; their mythology

also mentions a Demiurgus, who had formed the gods.

All the antient religions of Asia recognise a similar fate,

in the future, that might come, or about to come. It is

very easy to make use of this among nations that have

such, for example, as the alternating governments of

Ormuz and Ahriman in the Persian mythology. &c.

Among the Hebrews the Pharisees were fatalists, the Sab-

bians, the Eunomians, and the Manichaeans. The Ando-

nian religion of Odin modified this Fate, and brought it
to the idea of the government of the world by a deity,

identifying it with their highest god, Alfdar (Father of

* Many Psichian physicians (i.e. of mental maladies) of modern times maintain the exact contrary, that all the actions of mankind are the effects of circumstances, and that all asseociate consequries depend on these actions,
all). From this point fate changes to what is called predestination (in opposition to chance), which idea is only a mitigated fate, distinguished from genuine fatalism in proceeding directly from God, and not from fate. This belief in predestination was taught by Mohammed, and his followers have retained it. Catholicism has no trace of this doctrine, but it is held by the Calvinists, and to a certain extent at least by the church of England.

The doctrine of fatalism, as is well known, has been frequently and effectively used both by antient and modern poets.

Intimately related to fatalism is the doctrine of immortality and direct intervention of Providence in the government of the world. According to this doctrine the consequences of the actions of mankind depend wholly upon the actions themselves; God, however, is able to conduct these consequences, and collectively they shall result in good, or evil, according to his purposes. To comprehend this working precisely is impossible for man, since his mental powers are not sufficiently extensive, and this dogma must therefore be a matter of faith. This doctrine is held by many Christian sects, and the notions of the ancient philosophers in regard to immortality and providence, whether they be deists, atheistic, or pagans, are very much the same. But I will not enter into this subject; it is treated at large by Hobbes, and served for the foundation of the charges against him of deism and atheism.

If we consider these doctrines in a philosophical point of view, we shall have the following results. — The theological theories of fatalism, predestination, the immediate government of God, and his non-intervention, evidently bear an analogous relation to the political systems of despotism, constitutional monarchy, and republicanism. According to these views, man may have the advantage of being the adherent of one of these political systems, so may he also have grounds for being a follower of one of these theological views. According to the ideas and investigations of the author of this article, God may have positively fixed, before any of the events of the world, the eternal ideas, or the existence of things to each other within the circle of which nature and human intelligence have to move. These ideas are (1) for nature, self-preservation, or continuance, of which the product is attraction, &c.; (2) for society, self-love, beauty and virtue. In so far as nature and humanity with all their efforts cannot move out of this sphere of ideas, so far fatalism and predestination exist. The efforts of nature to be free is the cause of the order of things, and the order of virtue (or human happiness) appear to produce an ever-increasing progression, and in this sense they constitute an intervention of Providence — since nature being wholly bound, and God absolutely unconstrained, man stands between both; so that though he is not absolutely free, yet he is free to work his ultimate ends out of himself; he is free whenever he acts morally, and he is not free whenever he acts immorally (or rather physically), and he may thus arrive at the consciousness that his state in another world entirely depends on himself. With this conviction every species of intervention would appear less harassing towards him, and without these grounds he may be doubtful whether any direct intervention exists with respect to his actions.

An intervention of any other kind than that of God would lead to the doctrine of demons and spirits.

FATHER. [Parent and Child.]

Excommunication is the name given to the early teachers and exponents of Christianity, who lived between the second and the sixth centuries of our era, and whose writings are looked upon as possessing considerable authority in matters of faith. The earlier, or purer exponents, as they are styled, by the church, distinguished them from the fathers of the fourth and fifth centuries, and who followed close upon the apostolical age, namely the age in which the Apostles lived and died, are generally reckoned as follows. 1st. Clemens Romano, bishop of Rome, who died about A.D. 100, and of whom we have an interesting epistle to the church of Corinth. [Clem. I.] 2nd. Ignatius, bishop of Antioch, a disciple of the Apostles in his youth, was sentenced to death under Trajan, A.D. 107, and was taken to Rome to be executed, as he informs us in his epistles. He was exposed to the wild beasts in the amphitheatre. There are extant several of his epistles to various cities of the East, and one to that of Rome. His epistle to Polycarp is doubtful. 3rd. Polycarp, bishop of Smyrna, who is said to have conversed with St. John and other Apostles in his youth, and who suffered martyrdom A.D. 167, when only 86 years of age. He is the author of an epistle to the Philippians, which has been printed repeatedly, and is given in Cave's 'Antiquitates Ecclesiasticae,' vol. i. 4th. Justinus, a native of Neapolis, in Palestine, a man of considerable learning and a disciple of Tryphone. He died about A.D. 165. He was the author of an apologetic or apology for Christianity, which he came to Rome in the time of Antoninus, had a controversy with Marcion, an early heretic, and wrote an eloquent apology for the Christians, which is addressed to Antinous, and which drew from that emperor a rescript of toleration and protection. 5th. Clement, and 6th. Ireneaus, a Greek by birth, and a disciple of Polycarp of Smyrna, came with Polycarp to Rome, and was there sent to Lyon to assist the aged Photinus, bishop of that city, whom he succeeded A.D. 179. He wrote against the Montanists, and the manichaean heresy, and undertook after the death of Severus. He is called by Tertullianus a 'very insatiable explorer of every kind of knowledge.' His principal work, written originally in Greek, but which has come down to us in a Latin translation, is styled 'Adversus Haereses,' and is directed against the Gnostics. 7th. Clement of Alexandria, who was born about the middle of the second century, died about 220, left numerous works. [Clemens, Titus Flavios in Alexanderinus.] 8th. Cyril, bishop of Carthage, who was the founder of the Alexandrine school, and who wrote the following works: 'Apology for the Church'; 'Refutation of Hermas'; 'Apology for the Gospels'; 'Apology for the Prophets'. He was flourished 258. His works are numerous. [Cyprian, St.] He had been confounded by some with Cyril of Antioch, who suffered martyrdom under Diocletian. 9th. Origen of Alexandria, born about A.D. 186, died about 254; wrote numerous works, of which four have been preserved as heretical. [Origens.] 10th. Gregory, called Thaumaturgus, a native and afterwards bishop of Neo Caesarea, in Cappadocia, and a disciple of Origen, died soon after the Council of Antioch, which he attended A.D. 264; he was the author of a 'Martyrdom of Eusebius,' and 'De Vitiis Fidelium,' and 'Epistola Canonicis,' and a panegyric or oration to his master Origen, on leaving his school; to which the latter replied by an interesting letter, which is printed in his works. 11th. Irenaeus, bishop of Lyon, and also a disciple of Origen, was banished under Valerian to the deserts of Libya, but was restored to his see under Gallenius, who was engaged in controversy with Sabellius, Nepos, and Paul of Samosata, and died A.D. 250. Of his numerous writings, the fragments respecting the Tertullianus of Carthage, lived under S. Severus, and died at a very advanced age, under Alexander Severus. He is one of the most copious of the Fathers of the Latin church. In the latter part of his life he fell into the errors of the Manichaeists. [Irenaeus.]
The study of the Fathers is interesting not only to theologians, but to those who would examine carefully the philosophy and the states of society in their time. They are now much studied in the Protestant universities of Germany.

PATHOS. [Measures]

The Fatimides, the name of a race of kings, who assumed the title of caliphs, and reigned for many years over the coasts of Africa and Egypt. They obtained the name from the persecutions of the founder of the dynasty, Abu Mohammed Obeidallah, who asserted that he was descended from Fatima, the daughter of Mohammed and wife of Ali. The Arabic historians generally deny the truth of this, and say that he was a member of the family of the Dhafer, vizir of the Abbasid caliph, who was obliged to wander through various parts of Africa, till, through fortunate circumstances, he was rescued from a dungeon in Selomessa (A.D. 910) to sovereign power. He assumed the title of Mahdi, or director of the faithful, according to a prophecy of Mohammed's that he who should arise in the space of 300 years such an individual would arise in the west. He subdued the princes in the north of Africa, who had become independent of the Abbasides, and established his authority from the Atlantic to the borders of Egypt. He founded the city of Alexandria, was called the sultan of the Alphabed, a town on the coast of Africa, about a hundred miles south of Tunis, and made it his capital. He became the father of a great schism among the Mohammedans by dissension and an appeal to the kinsmen of the founder of the dynasty, Abu Mohammed Obeidallah, who was called Java, and who was succeeded by his son Dhibah, who was also a prince of the Fatimides, and who, after the death of his father, became the sovereign of the Fatimides.

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unt another army into Egypt under the same commander, who was accompanied by his nephew, the celebrated Saladin. In the winter of 1182, Saladin was again successful, and obliged to retreat. The ambition of Amauri allured shortly afterwards a more favourable opportunity for the reduction of Egypt. Amauri, after driving Shiroueh out of the country, meditated the design of reducing it to his own name. He was alarmed at the success of Amauri, and the assistance of Nureddin, who sent Shiroueh for the third time at the head of a numerous army. He repulsed the Christians, and afterwards put the tremendous vizir to death. Shiroueh succeeded to the king of the Fatheniiah, and his future descendants were supposed to be the descendants of Fustan an old mythical king of Latinga, who resided in the forest Albusse, with his wife Fustan, near the pond of sulphuraceous water, which is between Rome and Tivoli; both were gilded with the same extinguishing fire. In short, that age the party of Albusse continued to be the Delph of Latinga; the oracles were delivered by a voice issuing from its recesses, (Virgil, Enniud, viii, 52.) Several statues in the Italian and other museums are believed to represent Fustan; among the most remarkable is a statue of him in the gallery of the Louvre, and a very handsome one in the museum of the Capitol. The sleeping Fustan of the Barbelese is now in the gallery of Michelin.

FAUST. [MINING.]

Fau, FAUNUS, was the name given in the Roman mythology to the gods or genii of the woods, corresponding with our British faerie. The Faunus was supposed to be the descendants of Fustan an old mythical king of Latinga, who resided in the forest Albusse, with his wife Fustan, near the pond of sulphuraceous water, which is between Rome and Tivoli; both were gilded with the same extinguishing fire. In short, that age the party of Albusse continued to be the Delph of Latinga; the oracles were delivered by a voice issuing from its recesses, (Virgil, Enniud, viii, 52.) Several statues in the Italian and other museums are believed to represent Fustan; among the most remarkable is a statue of him in the gallery of the Louvre, and a very handsome one in the museum of the Capitol. The sleeping Fustan of the Barbelese is now in the gallery of Michelin.

FAUSSE-BRAYE, a name given to the rampart which is sometimes the exterior or parallel wall that constitutes the principal encircling of a fortress.

In the ancient fortifications a bank of earth was frequently raised in the ditch, nearly or quite contiguous to the wall of stone or brick surrounding the place, in order to protect the latter against the battering-engines of the besiegers; and the Italian engineers of the sixteenth century made notion of a detached wall of masonry similarly situated, which seems to have been intended for a like purpose. These walls are called a fausse-braye, subsequently by the French engineers, a fausse-braye; the first term indicating a covering work in the ditch, and the other simply a secondary or advanced rampart.

In and immediately before the time of Vavlin the fausse-braye was the exterior part of the rampart of a fortress; its terreplein, or upper surface, was situated a little above the level of the natural ground, and it carried a parapet for the protection of the defenders. The terreplein and parapet of the interior part of the rampart were several feet higher than those of the fausse-braye, and the interval between the two parapets was sometimes broad enough to allow room for artillery.

A good indication of the nature of this work may be obtained from the thickness of the terreplein of the fausse-braye, and, in order to render the example complete, it is merely necessary to suppose their parapets continued along the curtain and before the faces of the bastions.

The fausse-braye, thus formed, was intended for the defense of the ditch and covered by a close and more grading fire than that of the principal rampart; but the embattled fire to which the parts in front of the bastion were liable, and the destructive effects of the shells and granules thrown into the work by the enemy, rendered it impossible for the defenders to remain in it at the time when their services were most required; it also afforded to the enemy some facilities in escalading the rampart. On account of these defects, this kind of fausse-braye has been long since superseded, and the use of it in defending the ditch is substituted by the terreplein Bastions. (Fig. 1, p. 17.) It should be observed however that Canoth and other French engineers have recently proposed constructions which may possibly be considered as partial revivals of the fausse-braye, but with circumstances which appear to render the work more safe for the men present above mentioned.

FAUST, DR. A German scholar in the beginning of the fifteen century, who is not, as is frequently supposed, the same person as Faust, the assistant of Gutenberg. The popular traditions of Northern Germany give very strange accounts of this man, which are somewhat confirmed by contemporary eulogy as well as by many anecdotes as if he had been in the possession of supernatural secrets, of a mage eck, and other conjuring apparatuses: he was said to have commanded the elements, and to have performed the greatest wonders; but his life and work are in consequence of them completely obscure. The simple fact is, that Dr. Faust being in advance of his contemporaries in the physical sciences, made experiments, the results of which must have appeared superhuman to the narrow understandings of the people. But the popular personification has so disguised and decollated himself is much more interesting than the historical personage. Some of the greatest poets of Germany have represented Faust as a man infallible by the most ardent desire for knowledge, who, after having devoted himself for many years, dies and, at the conviction that the depth of truth is inaccessible to the human understanding. The despair of a mind this disappointed, and the fiction of the use of magic to get illumination to the forbidden regions of knowledge, impart to the whole a romantic character; and that has since become very old, and may be clearly traced to a primitive age. The circumstances that the wandering Punch and Judy showmen, those rude fathers of the drama in Germany, and even in France, have for centuries made, and are still making. In Germany itself the present century has again given a favourite entertainment of their auditors, proves how well adapted this character is to dramatic action. In modern times, Lessing, the originator of German dramatic art, undertook to dramatise the subject, it was an undertaking of the most pleasing, and it has retained a fragment.

The same idea however was taken up by Goethe, the greatest poet that Germany has yet produced. The following are the leading features of Goethe's work—Faust, scholar and professor in all the faculties of learning, who, not contented with the conviction of the insufficiency of his knowledge to reach the fount of truth, According he has recourse to magic. At his command appears the Ergeist, the symbol of the original power which invades all nature, directs its course, and organizes confusion and action. The spirit proceeds to explain to Faust its mode of creation and of action; but the limited human understanding is incapable of conceiving the immensity of the spirit, which disperses all reality, and engenders in Faust an intense longing for knowledge, which he himself to death from all material forms, and to enter the secret regions of knowledge. But the moment he puts the deadly cup to his lips, the tolling of bells, the sound of the organ, and sweet chanting fall on his ears, and bring back to life the sleeper, and he resumes his former state. In his &c. delights, that he cannot summons resolution to shake off the chains of existence. While he is still irresolute and despair, in the comfortless weariness of all human knowledge, the devil appears the negative and destructive principle opposed to the existing and creating, and Faust, reflecting his impotence when in presence of the Ergeist, resolves to enter into a compact with the repulsive spirit, not with the expectation of satisfying his longing after knowledge, for he knows that the human intellect is but a narrow lantern and is more closely allied to truth than the evil spirit; neither is it his intention to obtain enjoyment by his agency, as the pleasures of the world have no charm for the man who is eager after the unapproachable and hidden, and who dreads to see his life unavailing driven into the vortex of sensuality, and as soon as the intellect of man loses his empire, he is carried into the abyss of material existence. This is the fate of Faust. The first volume of the work, published about four years previous to the second, leaves Faust degenerate and sunk in sensuality, and struggling in vain to emerge from it. Instead of following up the conflict of the two opposite principles the one spiritual and vivifying, the other
within forty days after the end of that session of parliament, and that all such priests or other religious persons ordained since the same time should not come into England, or remain there under the pain of suffering death as in case of treason." It was also enacted by the same statute that all persons receiving or assisting such priests should be guilty of a capital felony;" but it may be said that these and other rigorous statutes were not at all times enforced; but they placed the whole body of the Catholics at the mercy of the Protestant government: for them there therefore was no liberty, personal or religious, but such as the privy council thought proper to give; and with reference to their religion, the law gave them no rights, and affronted them no protection.

The facts, that James I., although himself a Protestant, was born of Catholic parents, had been heretical Catholic archbishop, and approved several of the ordinances of the Roman church, gave to the Catholics at his accession hopes of a revival of their liberties. At first, indeed, it appeared that their wishes would be realised, and the severity of the laws was not increased. But if kept less by religion than by a more important object, viz. the suspension of the long-promised marriage of his sister to the Spanish prince, which in the last year of Elizabeth had amounted to 10,333L., in the first year of James's reign scarcely exceeded 50L., and in the second they were little more than 200L. James however was no sooner firmly seated upon the throne than he overthrew all the works of his predecessor. He assured his council that 'he had never any intention of granting toleration to the Catholics,' that he would fortify the laws against them, and cause them to be put into execution to the utmost.

We must refer to vol. ii. of 'Criminal Trials,' from which this article is extracted, for a fuller account of the enactments made at this time against the Catholics: sufficient has been said to show the cause of their discontent with the government, the king, and the Protestants in general. The only safe place for a Papist was in the houses of his own family with gunpowder at the opening of parliament, and thus destroying at a single blow the King, the Lords, and the Commons, was formed about the summer of 1604. The author of this design was Robert Catesby, a Catholic, the son of Sir William Catesby, who had been several times imprisoned for recusancy. Catesby disclosed his scheme to John Wright and Thomas Winter, the former descended from a respectable family in Yorkshire, the latter of the Earl of Holderness. The latter from the Winters of Huddington in Worcestershire, where they had been in possession of estates since the time of Henry VI. At a conference held between these conspirators, it was agreed that Winter should go over to the Netherlands to meet Velasco, constable of Calais, who had arrived at Flanders on his way to England, to conclude a peace between James and the king of Spain, and request him to solicit his majesty to recall the penal laws against the Catholics, and to admit them into the rank of his other subjects. Winter was the more encouraged by the hopes that he would stipulate in the treaty of peace for the liberties of the English Catholics, and so returned to England, having in company Guido or Guy Fawkes, who, it was thought, would be of assistance in the business. Fawkes was a gentleman of good parentage and respectability in Yorkshire; his father, Edward Fawkes, was a notary at York, and held the office of registrar and advocate of the Consistory Court of the Cathedral. Of his education and early history nothing is known; but having spent the little property that he had in hunting, and in a Spanish army in Flanders, and was present at the taking of Calais by the Archduke Albert in 1599. Soon after Winter's return to London, Thomas Percy, the relation and confidential servant of Sidney and the Earl of Northumberland, one of the four conspirators already mentioned, and the following oath of secrecy, was administered to each, kneeling with his hands placed upon the Primer:—"You swear by the blessed Trinity, and by the sacrament you now propose to receive, never to disclose the design; or, in the instant of resistance, the matter that shall be proposed to you to keep secret, nor desist from the execution thereof until the rest shall give you leave." They then heard mass, and received the sacrament from Father Gerard in confirmation of their vow. Percy took the next step. He was a gentleman pensioner, and upon pretence that it would be convenient to him when in attendance in that capacity, he purchased of one Ferris the remainder of a short term which he had in the lease of a house adjoining the parliament house.
Fawkes, who was unknown in London, and had assumed the name of Johnson, acted as Perey's servant, and took possession of the house. Parliament was soon afterwards adjourned till the 7th of February, and the conspirators having first hired a house in Lambeth, and a place of deposit for combustibles, agreed to meet in London about the beginning of November. The custody of the house in Lambeth was committed to Robert Keyes, the son of a Protestant clergyman in Dorsetshire, but himself a Catholic, and he, with the churchwarden, was charged to examine him also. The proceedings of the star chamber during the interval of their meetings so exasperated the conspirators that they became more eager than ever about the plot. Catesby and his confederates, according to a previous agreement, assembled in the house of Lord Flanders, on the 3rd of December, and a mine was immediately commenced. The stone wall, however, which separated them from the Parliament House being found three yards in thickness, Keyes and the younger brother of John Wright (who was enlisted as the workman by night from Lambeth), and the seven men were thus occupied until Christmas-eve without their ever appearing in the upper part of the house. During their laborious employment they had much consultation respecting the scheme to be adopted.

It was supposed that Prince Henry would accompany the king to the Parliament House and perish there with his father. The Duke of York, afterwards Charles I, would then be the next heir, and Perey undertook to secure his person, and carry him off in safety as soon as the father was gone. If this should fail the princess Elizabeth was to be surprised and secured by a party provided in the country. It was the intention to proclaim one of the royal family as king. It was also arranged that Warwickshire should be the general rendezvous of the conspirators should he be sent to the houses of several of the conspirators in that county, to be used as occasion might require.

In the midst of these deliberations Fawkes brought intelligence that the parliament had again been prorogued from the 1st of March to the 3rd of October, with the view of the conspirators therefore separated for a time; and in the mean while John Grant of Norbrooke in Warwickshire, and Robert Winter of Huddington, were sworn in among their number. In February (1605-6) their labours were resumed, and the stone wall nearly half broken through. One morning while working upon the wall, they suddenly heard a rushing noise in a cellar nearly above their heads. At first they feared they had been discovered, but Fawkes being despatched to reconnoitre, found that one Bright alone was in the cellar, and had his candle put out. In order to round up his associates he carefully surveyed this large vault situated immediately below the House of Lords, and perceived its fitness for their purpose. The difficulties connected with breaking through the wall, its thickness, the damp of the damp cellars, for water constantly oozing through the stone work, and the danger of discovery from noise, disposed the confederates to abandon their operations, and to possess themselves of the cellar of Bright. The vault was immediately hired, and about twenty thousand pounds were raised by night from Lambeth: iron bars and other tools that had been used in mining were also thrown among the powder that the breach might be the greater, and the whole was covered over with faggots.

Number of various kinds was placed in the cellars prepared for this purpose, and on the night of the 4th of November the preparations were complete: the conspirators having marked the door, in order that it might be seen if any one entered the vault, consented to separate; before their separation, however, it was proposed that an attempt should be made to oblige Sir William Stanley and Owen of the precincts with the news of their conspiracy,

This was agreed to on condition of their being sworn to secrecy, and Fawkes was dispatched to Flanders for the purpose of communicating with them. Sir Edmund Baynham was sent as his substitute. The news of the plot when the paper of the explosion arrived at Rome he might be prepared to negotiate on behalf of the conspirators, and to explain that the design of the plot was the re-establishment of Catholicism. Soon after Fawkes's return from Flanders the parliament was further prorogued from October to the 7th of November. These repeated prorogations alarmed the conspirators, and led them to fear that their project was suspected. Their alarms however having been discovered to be groundless, Catesby purchased horses, arms, and powder, and under the pretence of making levies for the archbishop of Flanders, assembled friends who might be armed in the country when the first blow was struck. As considerable sums of money were necessary for these purposes, it was necessary to go to England for additional funds. Sir Everard Dibig (Dulon), Ambrose Rockwood of Coldham Hall in Suffolk, and Francis Tresham, the son of Sir Thomas Tresham of Rushton in Northamptonshire, these gentlemen were afterwards sworn in. After this as the Catholic party approached, it was finally determined that Fawkes should fire the mine with a slow match, which would allow him a quarter of an hour to escape. Sir Everard Dibig was to assemble a number of Catholic gentlemen in Warwickshire on the 7th of November, under pretence of a hunting party, and Perey was to seize the prince of Wales, or the duke of York if the prince should go to the parliament house with the king. One subject of discussion only arose, whether and how the Catholic peers should be warned of their danger: each conspirator again was reprimanded for communicating the project to so large a number of persons. Many of the conspirators were averse to this advice and angry at its adoption; and Tresham in particular, for his sisters had married Lords Stuart and Montague. Indeed Tresham so passionately required that Lord Mountagu should have a drapery to conceal him, that words ensued; and when he was thwarted in his wishes, he hinted that the money which he had promised would not be forthcoming; and from this time he ceased to attend their councils.

On the 26th of October, ten days before the meeting of parliament, Lord Montague unexpectedly gave a supper in a house which he had not lately occupied. Circumstances have given rise to a belief that he was privy to the plot at the time that he invited his friends, and that he was the first to discover the conspiracy to them. As this is by no means so, as our source of information is merely by conjecture, and not that from which we may trust. It has been discovered that Tresham was the writer of it, but that rather that Tresham was its author. It is a point, however, we have not room to discuss, and therefore must refer the inquirers reader to Criminal Trials (vol. i. p. 66) for further remarks upon it.

On the 28th, the conspirators, after conferring, showed the letter to several lords of the council, who with him agreed that no steps should be taken until the king returned from hunting at Roslyn. The contents of the letter and its communication to many of the council, as well as theWater Newton, had been in consequence of the refusal of the conspirators; but though their danger was evident, and the vessel which was to convey Fawkes to Flanders was lying in the river, they made no attempt to escape. All suspected Tresham to be their betrayer, and he was accused by some of the Catholics of the plot; but he and his confederates denied it, and it is not known to what extent their proceedings had been divulged, they had still hope of effecting their design; especially as, upon examination, Fawkes found that the cellar was not watched, and had not been disturbed.
PAYAL is one of the Azores or Western Islands. It is situated in the 32° lat. and near 29° W. long., and is more than 24 miles long from north to south. The climate of Azores, it has an uneven surface, and in some places the hills rise into mountains. Though the soil is rocky, it is very fertile, and vegetation is favoured by the mildness of the climate. The island grows firs and pines, pomegranates, chestnuts, sweet plums, oranges, and figs, and the produce of agriculture is the vine. In good seasons, from 8000 to 10,000 pipes of wine are exported, chiefly for America; oranges are sent to England and corn to Brazil. Its harbour, Horta, is the best in the whole group. Boats alone were sent from the island of Constance to Portugal. Like the other islands, it is inhabited by Azorean settlers, and the produce of these islands is accordingly brought to Payal for exportation. Payal has also the advantage of lying directly in the track of European ships homeward bound from South America and India, and is visited by many vessels. But trade is not always brisk, sometimes not even improperly called Payal, is a pretty little town with 5000 or 6000 inhabitants; it is the place of export for the product of this and the neighbouring islands.

PAYETTE, MARIE MAGDELAINE DE LA VERGNE, Countess de la, was a French officer and a nobleman of Provence. She took lessons in Latin of Ménage and Father Rapiin, and soon made great progress in that language. In 1655 she married Francis, Count de la Fayette. In 1658 she became the rendezvous of the literary circle and the wish of the monogamous Ménage, Huet, and Segrais were her most frequent visitors. The Duke de la Rochefoucault, celebrated for his wit and his licentiousness, became acquainted with her, and she declared after having contributed to his reformation, that Madame de Sevigné, with her letters, had a moral character of Madame de la Fayette as well as her talents. She wrote several novels which obtained a high reputation at the time, being the first of the kind in France written in a natural style, and freed from the exaggerations and affectation of former novelists. She was one of the 1. "Mémoires de la Cour de France, pour les années 1698-99," which contain some curious particulars. 2. "Divers Portraits de quelques Personnes de la Cour," being true sketches of the leading characters of the court. It is said that Angletou, son of Madame de la Fayette left also other memoirs of contemporary history which have not been published. Her printed works were collected and published together in 8 vols. 12mo., Paris, 1786, with an introduction, together with the works of Madame de Teneden. Her correspondence was published in 1805. Madame de la Fayette died in 1693.

PAYETTE, GILBERT MOTTIER, Marquis de la, was born on the 1st of September, 1753, at Genneteau near Brioude, in the present department of the Haute Loire. He married at the age of sixteen Mademoiselle de Noailles d'Ayen, and his wife's relations offered him a place at court, which he refused. When the American revolution broke out, he, la Payette, who was deeply interested in the cause, made an offer of his services to Benjamin Franklin, which being accepted, he armed a vessel at his own expense and landed at Charleston in April, 1777. He fought as a volunteer at the battle of the Brandywine on the 11th of September, 1777, in which he was wounded. Congress having given him a brevet of major-general, he served in the north under Washington's orders, and was at the battle of Monmouth in June, 1778, and afterwards received the thanks of Congress for his gallant conduct, and the present of a valuable silver sword. In 1779 he resigned his commission, and government of that country having acknowledged the independence of the American States, and he obtained assistance in men and money, with which he returned to America. In 1780 he commanded the advanced guard of Washington's army. It is said that he made, with the defensive of Virginia against Lord Cornwallis. Being joined by Washington and Rochambeau, he contributed to the operations in consequence of which Lord Cornwallis was obliged to capitulate at York Town. After the treaty was signed, he returned to Europe with reinforcements, but the peace of 1783 prevented his sailing back to America. He however revisited that country some years after, and was received in triumph by his grateful citizens, whose independence he had powerfully contributed to establish. After his return to France he travelled through Germany, and was received with marked distin-
When Lucien appealed to the Assembly not to forsake his brother in his adversity, La Fayette replied with great emotion: "We have followed your brother through the storms of his life to the frozen deserts of Russia; the bleached bones of two millions of Poles scattered all over the globe attest our devotion to him; but that devotion," he added, "is now exhausted, as his cause is no longer the cause of the nation."

After the Legislative Assembly had declared war against the allied troops, La Fayette protested against that violation, and retired to his country residence at Lagrange. In 1791 he was returned again for a great struggle to the Chamber of Deputies for the district of La Sarthe. During that act he declared the following sentiments, in favour of the separation of the civil and military forces, of the national liberty and against exceptional laws, but to no effect.

In 1824 he went on a visit to the United States, where he was received with the greatest enthusiasm in every State. In 1830, being in the house of deputies, he was foremost among the members who resisted the arbitrary ordinances of Charles X. He then called out again the national guards and placed himself at their head. Faithful to his old constitutional principles, he proposed Louis Philippe as king of the French, stating his conviction that a monarchy based on popular institutions was the government best suited to France. During the trials of the ministers he exerted himself zealously to save them from popular fury. Of the subsequent differences between him and Louis Philippe concerning views of foreign and domestic politics, which culminated in the banishment of La Fayette from Paris on the 29th of May, 1834, and his funeral took place on the 26th of the same month, being attended by numerous friends, foreigners as well as French peers and deputies, who showed the high sense which they entertain of his character.

La Fayette was a man of sturdy and independent mind, which, according to his own directions, he chose to live in the same gnat with his wife. He was one of the few public men whose character passed unscathed through the ordeal of half a century of revolutions. (Semper, "La Fille de la Tour de Nesle," pp. 262-3.) On the 26th of July the multitude had prevailed on him to be probably the means of saving the lives of the king and the royal family on that occasion, by escorting them back to Paris, whither the Assembly also removed their sittings. He voted in the Assembly for the institution of the jury, for the suppression of hereditary nobility, for the political equality of all citizens, &c. Mistreating the effects of individual ambition in revolutionary times, he moved and carried a resolution to the effect that the same person should not have the command of the national guards of more than one department at one time, and he opposed the appointment of lieutenant-general of the kingdom. In conjunction with Bailly he instituted the club of the Feuillants, which supported the constitutional monarchy on a popular basis. After the king's forced return from the flight of 1791, La Fayette's name was preserved upon the roll of men by which the king was restored to the exercise of his regal office on swearing to the new constitution. Upon this the republican party broke out into an insurrection, which La Fayette and the national guards put down on the Champ de Mars. Soon after he was present at the national convention, which, however, gave him no choice between a republic and a monarchy; but the war of the first coalition having begun, he was appointed to the command of the army of Flanders, and he defeated the allies at Philippville and Maubeuge.

He was however hated by the Jacobins at Paris, and mistrusted by the court. On the 16th of June, 1792, he wrote a strong letter to the Legislative Assembly, denouncing the plots of those men "who, under the mask of democratic zeal, sowed discord under the pretext of their license." He soon after repaired to Paris, and demanded of the Legislative Assembly a reparation for the injuries committed against the king at the Tuileries on the 20th of June. But the republican party was already preponderating in that Assembly, and La Fayette found that he was not safe in Paris. He then proposed to the king and the royal family to take shelter in his house at Conflans, but the advice was rejected by Louis, or rather by those around him, who placed all their confidence in the duke of Brunswick and the Prussians.

On the 24th of June, the Jacobins at Paris burnt La Fayette in effigy in the Palais Royal. La Fayette having returned to his camp, publicly expressed to his officers his disapprobation of the attack on the Tuileries of the 10th of August, and on the 14th of that month he arrested the commissioners sent by the Legislative Assembly to take him. Upon this he was outlawed, and was obliged to cross the frontiers with a few friends. His intention was to repair to some neutral country, but he was arrested by the Austrians, and carried to the fortress of Olmuz in Moravia, where his wife and daughter soon after joined him, to console him in his confinement. He remained in prison for five years, and was released at last by the treaty of Campo Formio; but not approved of the arbitrary conduct of the Directory he repaired to Hamburg, and did not return to France till 1810, when he became himself again in opposition to Bonaparte's ambition, and he voted against the consular for life, refused all employment under that chief, and retired to the country, where he applied himself to agricultural pursuits.

In 1815 he was received in the house of representatives, convoked by Napoleon on his return from Elba. After the defeat at Waterloo he spoke strongly against any attempt to establish a dictatorship, and moved that the house should declare its sittings permanent, and that any attempt to dissolve it should be considered as treason.
visual nerve will produce absolute terror, so may a smaller
degree of terror produce the more lasting sensations of
dread or fear, i. e., interchanging pauses of consciousness
and unconsciousness. With the brain and spinal
narrow the nerves are connected which lead to the lungs,
to the stomach, to the muscles, and other parts of the
body. It is therefore not surprising that dread or fear
should display itself in shortness of breath, irregularity of
pulse, palpitation of the heart, coldness of the skin,
sickness, and powerlessness of the limbs.
Fear may also be produced through a disordered action
occasioned by some local affection of the heart or lungs,
or by the extreme disorder of the blood, or through a
general sickness, as in the cholera.

FEAR, CAPE. [CAROLINA, NORTH.]

FEAR, CAPE, RIVER. [CAROLINA, NORTH.]

FEAST or FESTIVAL, an anniversary day of civil or
religious importance.

Among the Jews, the feast of Trumpets, that of
Expiation, the feast of Tabernacles, the feast of Dedication, the
Passover, Pentecost, and the feast of Purification, were the
principal. The modern Jews have a few more, but they are
of the reader who would know more of the English festivals
at an earlier period, may consult the Liber Festivorum
printed at Westminster by W. Caxton, sm. fol., 1483, which
contains chiefly a collection of Sermons, preached to the
common people upon them. See also Festas Anglo-Romana,
1814, by Knightley, 1679; and Serres, on the Old
History, giving an exact and comprehensive account of all
the Feasts and Fasts of the Church of England, 2nd edit.,
London.

FEBRUARY, the second month of the year.

Its name is derived from Febro, to purify or cleanse. The Luper-
cali were celebrated in this month. (Ovid, Fasti, ii. 1, 19,
31.) The Saxons called it Sol-Monath, because the sun's
meridian altitude visibly increases in it.

February was not in the Calendar of Romulus. It was
added to the year by Numa, who gave it the twelfth
place in the Calendar. The Decemviri transferred it to
the place in which it now stands. (Ovid, Fasti, i. 47.)
Numa assigned twenty-eight days to it in order that the
assembly of the patricians might be adjourned during the
Pythagorean feasts. (Macrobi. Saturnal. i. i. c. 13.) In
an ordinary year February has twenty-eight days; in bis-
sextile, or leap-year, it has a twenty-ninth, or intercalary
day. (Deseretite.)

FECAMP, a town in France, in the arrondissement of
Havre, at the mouth of a small river on the coast of the
department of Seine Inférieure, 116 miles north-west
of Paris, and 40 from Rouen, the capital of the depart-
ment. Fecamp is said to have existed in the Roman times
as a place for collecting tribute, and to have been
dedicated to Finé Campion, who is supposed to
own its historical celebrity to an abbey for nuns founded
A.D. 664, or thereabout, by Waning, count or governor of
the Pays de Caux. The Normans under Hastings, A.D.
1066, dispersed the church, and the abbey was
ruined. There was a noble conventional library well stored
with MSS., and containing among its archives many deeds and
charters of William the Conqueror and his successors. Casimir,
king of Poland, upon the voluntary abdication of his throne,
retired to this abbey. Fecamp was also the occasional
residence of the dukes of Normandy.

Mr. Dawson Turner, who visited Fecamp in the year
1818, thus describes it:—"Fecamp, like other towns in the
harbour, is built in a group of elevated promontories on
approaching it, threads through an opening between hills "stern and wild," a tract of "brown heath and shaggy
wood," resembling many parts of Scotland. The town
is long and straggling; the streets steep and crooked; its
inhabitants official and seafaring. The annual
population of France, amount to 7000, and the number of its
houses is estimated at 1300, besides a third of that
quantity which are deserted, and more or less in ruins."

The population in 1832 was 8699 for the town, or 9123
for the whole parish. The church of St. Etienne, the
church above is yet standing; it is 370 feet long, and 70 foot high; the
transept, including the Chapel of the Precious Blood,
is 120 feet long, and the tower 200 feet high. Some circular
chapels round the choir are probably parts of the
church as rebuilt by Duke Richard in the twelfth century, but the rest of the building is all in the
pointed style, and scarcely any part is earlier than the end
of the twelfth century; the cloister is modern. The church
of St. Etienne, one of the ten parochial churches which
Fecamp had before the Revolution, has a very imposing
exterior.

The inhabitants are engaged in fishing, manufactures,
and commerce; a few years since (Dupin, Forces Product.
ives de la France, 2nd ed., iv. 139) they engaged in whale
fishing in the coal and whale fishery, at one hundred
and forty-eight in the mackerel, herring, and other
smaller fisheries. The decline of this branch of industry has led
many of the fishermen to engage in manufactures. The ma-
factures in 1832 are as follows, and it is known that
fishing, in which near 1400 workmen are occupied; also linens,
leather, articles of clothing for the colonies, iron ware,
keg, rape-oil, and refined sugar. The trade is chiefly
coaling-trade, or the supply of the English smugglers with tea,
brandy, hollands, &c; and other contraband articles. The
port, which is formed by the mouth of the small river which
falls into the sea at Fecamp, has been much improved.
Courses of instruction are given on navigation, geometry,
and mechanics applied to the arts; there are a tribunal
do commerce, and a commercial court of the county; the
poor order of the town, and of the small hospital.
Limestone is quarried, and chalk refined in the
neighbourhood.

FECIALES, in ancient Rome, were the messengers
or heralds of war and peace; they belonged to the order of
the centurio, and their persons were held sacred even by
enemies. When the Romans had or pretended to have
grudges against another state, they sent one of the feciales,
who, clad in his solemn robes, entered the omnious terri-

or town, and in the presence of the assembled people,
= The other states, or the centurio, came in, and the
courts of the centurio, the centurio, presided over it. The
centurio, he took to witness Jupiter and the other gods that he
had religiously performed his duty, and that it was now the
business of the Roman senate and people to decide upon the question. On his return to Rome he declared to the senate that his mission, according to him, might now declare war if they thought proper. If war was decided upon, the herald went again to the limits of the hostile state, and there, in presence of witnesses, appealing to Jupiter and the other gods celestial and terrestrials, he shown by the Senate that people, while it remained, the presence of the Senate was likewise required, as with the Romans all political conventions partook of a religious character. The Etruscans and other antient Italian nations had also their feaciles. This institution had a beneficent effect, insomuch as it tended to humanize the system of warfare, and to prevent sudden and unexpected aggressions. (Pitius, Hildebrandus, and the other writers on Roman antiquities.)

FECUNDATION. [STARCH.]

FEDERATION. [IMPRESSION OF PLANTS.]

FEDERATION. A federal union of sovereign states may be most easily conceived in the following manner:

We will suppose that the sovereign power in any number of states is vested individually in several states. These sovereign powers may agree respectively with each other and with all not to exercise certain functions of sovereignty in their several states, and to transfer these functions to be jointly exercised by the contracting sovereigns. The object of this compact will be that the contracting sovereigns, in their joint capacity, will become sovereign in each state and in all the states. The several sovereign persons having for the time surrendered to the joint body certain powers invested in them, and their sovereignity is suspended, but are not destroyed, and are sovereign in their several states. The powers surrendered to the joint body may be determined by written contract, the interpretation of which belongs to the joint body, yet in such a manner that there can be no valid interpretation of the contract, unless the sovereign powers are unanimous; for if any number or majority could hind the rest, they might, by interpretation, deprive the sovereign powers invested in the several states. This is the continuing consent of all.

This is the simplest possible form of a supreme federal government; one in which the contracting sovereign powers are not divided among the states, but individuals in their several states. The aggregate capacity exercise the functions of sovereignty. Such a federation may have never existed, but any federation that does exist or can exist, however complicated it may seem, is reducible to these simple elements.

If the sovereign powers, instead of being in individuals, are in all the people of the respective states, the only difference will be that the functions of sovereignty, which in the first case we supposed to be exercised by the individual sovereigns in their joint capacity, must, in this case, be delegated to individual members of the sovereign body. The citizens of the several sovereign states must in the first instance of necessity delegate to some of their own body the proper authority for making the federal contract or constitution; and they will authorize the persons out of the same body in the mode prescribed by the federal contract, for executing the powers intrusted by the federal contract to persons so appointed. Thus the individuals who form the federal contract may be and in all cases considered as the agents of the sovereign states, though the names of the state and individuals determined to carry into effect the terms of the federal contract are the ministers and agents of that sovereign power which is composed of the several sovereign states, which again are composed of all the citizens. By whatever name President, Senate, House of Representatives, or whatever other name, the agents of the sovereign power are denominated, they are only the agents of those in whom the sovereign power resides.

When the sovereign power is so distributed, the question as to the interpretation of the federal contract may be more difficult, but in principle it is the same. No one state can be bound by the interpretation of the rest, for if this were once allowed there would be no assignable limit to the exercise of the functions of sovereignty by the several states. We will suppose that the power of the states have in their aggregate capacity. It is a clear consequence of the nature of the compact, whatever the several sovereign powers are nations or individuals, that each contracting power must exercise its judgment on the interpretation of the compact, and that the interpretation from which any power dissents can, consistently with the nature of the compact, bind that power.

In the case of complete dissent or disagreement by any one power, the contract is, by the very nature of its terms, at an end; for the contracting parties to be sovereign powers, they cannot severally as such yield obedience to another sovereignty, which results from the aggregation of several sovereign powers: their acts in their joint capacity must be acts of complete consent.

If the sovereign power in such a federal union has delegated the power of interpreting the written instrument of union to certain judiciary authorities, appointed under the federal compact for the purpose of carrying its provisions into effect, the several sovereign powers must still exercise, either by their legislative or their judiciary authorities, their right to judge of the correctness of the interpretation, just as much as if the several sovereign persons, in the case first supposed, themselves exercised the functions of sovereignty in the supreme federal government.

With regard to the federal government of the United States of North America is an example of a federal or federal government, or a supreme federal government. The contracting parties were sovereign states (the sovereignty in each state being in the citizens), which in their capacity as contracting states, formed a supreme federal government. The ministers for carrying into effect the federal government are the president and congress, and the judiciary of the United States. By the preamble to the constitution it is in fact declared that the 'people of the United States are sovereign.'

The fifth article of the constitution provides that 'The congress, whenever two-thirds of both houses shall deem it necessary, shall propose amendments to this constitution, or, on the application of the legislatures of two-thirds of the states, shall call a national convention for proposing amendments, which, in either case, shall be valid to all intents and purposes, as part of this constitution, when ratified by the legislatures of three-fourths of the states, or by conventions in three-fourths thereof, as the one or the other may be required.'

This is the only provision of the constitution that has been amended, and by the alteration of the provision, the impossibility of amending the constitution to any extent is provided, &c., and that no state, without its consent, shall be deprived of its equal suffrage in the senate.' From this article it is clear that the framers of the constitution did not fully comprehend the nature of the supreme federal government, nor did they comprehend that the several states may be bound without their unanimous consent, which is contrary to conditions essentially implied by the nature of the union. This article involves also the inconsistency that the sovereign in any state may bind his successors: if the case of a federal or federal government that sovereign persons had been that to be provided for, the impossibility of the provision would have been apparent; but the imposibility equally exists when the contracting sovereign powers are respectively composed of many individuals, the whole government is still the essence of the union that has been formed.

This is not the proper place to discuss the advantages and disadvantages of a supreme federal government, nor to examine into its stability. That it is necessarily defective in one element of stability, namely in the capacity for all the contracting parties to continue their consent, is evident: in this respect it is like a partnership for an indefinite period, which may at any time be dissolved by any one of the partners. Such a power, which is incident to the preservation of the union, is a great advantage. So long as all the parties agree, they have the benefit of the union; when they cannot agree, they take instead of it the benefit of the separation.

It is also foreign from our purpose to consider what is the nature of the union in a union like that of the United States, resulting from the powers placed in the hands of the President and Congress by the States setting in their aggregate capacity. If such power were placed in such hands by sovereign persons originally severally several in their respective states, as in the case first supposed, the regi
lance of these persons in their aggregate capacity, though somewhat less than the vigilance of a single sovereign person, would probably prevent any undue assumptions of power on the part of those to whom they had delegated certain functions. It grew to be the forerunners, who in their aggregate capacity form this federation, that were removed from those to whom they delegate certain powers, and the more numerous are the individuals in whom this aggregate sovereignty resides, the greater are the facilities and means of preventing such abuse. This tendency, their ministers and agents practically to increase those powers with which they may have been intrusted.

In their capacity of ministers and agents, having patronage at their command and the administration of the revenue, such agents may readily acquire the power of influencing the election of their successors, when their own term of office is expired, and may thus imperceptibly, while in name servants, become in fact masters. That there is such a tendency to degenerate from its primitive form in several states, from which, as in all organized bodies to be resolved into their elements, seems no sufficient reason for not forming such union and deriving from it all the advantages which under given conditions it may for an indefinite time bestow on all the members of such federation.

Those who wish to examine into the nature of the North American Union and the party questions which have arisen out of the interpretation of the federal constitution may consult the essays of Jay, Hamilton, and Madison in the Federalist, the Journal of the Philadelphia Convention, printed by Biddle, who would unite all the members of the confederacy, and yet leaving these resolutions to be enforced in each state by its own sovereign power. Such a union therefore differs essentially from a supreme federal government, which enforces its commands in each and all the states. As to the existence of a written constitution, it is called, in the one case and a mere compact in the other, that makes no essential difference, for the federal constitution, as we have shown, is merely articles of agreement, which only derive their efficacy from the continued assent of all the states and destroy the aggregate capacity to form the sovereign power in such federation.

As to a system of confederated states, Austin adds: 'I believe that the German Confederation, which has succeeded to the antient empire, is merely a system of confederations. I believe that the present diet is merely an assembly of ambassadors from several confederated but severally independent governments; that the resolutions of the diet are merely articles of agreement which each of the confederated governments spontaneously adopts; and that they owe their legal effect, in the body of the compacted communities, to laws and commands which are fashioned upon them by its own immediate chief. I also believe that the Swiss Confederation was and is of the same nature. If, in the case of the German or of the Swiss Confederation, the body of the constituents possesses its own regulations, those confederated governments are one composite state, rather than a system of confederated states. The body of confederated governments is properly sovereign; and to that aggregate and sovereign body of sovereign constituent members is properly in a state of subjection.'

FEDOR IVANOVICH, the last tsar of Moscow, of the dynasty of Ruric, ascended the throne in 1884, after the death of his father, the celebrated tyrant Ivan Vasiliowich. He was weak in body and in mind, but he possessed the mental qualities which made him a talented Godunoff during his reign, which was marked by some events that produced a decisive influence on the destiny of the Russian empire. It was during Fedor's reign that the peasants of Muscovy, who had hitherto enjoyed peculiar rights, were deprived of all of them. The government of Fedor was merciful to those of any other who would grant them better conditions, were converted into serfs attached to the ground (servi giam adscripti). This change was introduced in 1593 by the instrumentality of Godunoff, who adopted that measure in order to gain a party among the landownerś. There had been previously to that epoch domestic slaves in Russia, but the predial scraf dates only from that time. The clergy of the Muscovite church was entirely in the hands of the patriarch or archbishop of Moscow, but after the capture of Constantinople by the Turks, the supremacy of the Greek patriarch over the Muscovite church was almost destroyed. Jeremy, patriarch, among the Moscovites, in 1515, in order to collect annats for the election of church, was received with great honours by Fedor, who, being exceedingly devout, presented the head of the Greek church with rich donations. Jeremy acknowledged the kindness he received by consecrating a new church of Moscow, which dignity lasted till the time of Peter the Great, who abolished it, and declared himself the head of the Russian church.

The conquest of Siberia, which had been commenced under Ivan Vasiliowich, was completed under Fedor, during whose reign Russia made the first attempt to extend its influence over the Caucasian regions. The khans of Crimea invaded Russia, and penetrated to the capital, but he was repulsed from the walls of Moscow in 1591. The reign of Fedor is also remarkable for many diplomatic relations with foreign courts, and particularly with that of England. The most important event of Fedor's reign was his attempt to get himself elected king of Poland in 1587. Fedor, or rather his prime minister Godunoff, promised, to the states of Poland and Lithuania, that if they elected him king, he would organize their army, and conquer the Crimea for Moscow, and Wallachia, Moldavia, and Hungary for Poland. The proposed union would have easily created a power capable of accomplishing not only the projected but even much more extensive combinations. Fedor, however, being driven by the majority of the Lithuanians, and they found many partisans even amongst the Poles. He was on the point of being elected, when, fortunately for the repos of Europe, the overbearing conduct of the Muscovite ambassadors destroyed the hopes of Fedor. The Duke of Nemiga, of Sweden, was elected king of Poland. Fedor died in 1591, and with him ended the dynasty of Ruric on the throne of Moscow, his younger brother Demetrius having been murdered through the instrumentality of Godunoff.
ber of the same body does not possess. The genealogical records of the Moscovite nobles, which did not relate to their claims of precedence, were spared by Fedor, and even arranged in order by his command. Death prevented Fedor from attempting other reforms in his country; he died in 1632 at the age of 38.

FEE SIMPLE. [Estate.]

FEE TAIL. [Estate.]

FEELING. [Touch.]

FEES, certain sums of money claimed as their perquisite by official persons under the authority of various acts of parliament, and by prescription. The right to fees, as well as the amount payable in most cases connected with the administration of justice, has been regulated by several recent acts.

Officers demanding improper fees are guilty of extortion. [Exortion.]

The rewards paid to barristers and physicians, attorneys and surgeons, for their several services, are called fees, which are reckoned by the hour. It is known that in the 13th century, the nobility of France, physicians and lawyers could not recover their fees by any legal proceeding, on the ground that they are not capable of being fairly estimated in amount, and also because they are or ought to be paid in advance. [See COUNSEL; PAYMENT.]

Fehmgcricht. [German.]

This word signified originally an air. [Air.]

Fe thống. [German.]

Fehmgcricht. [German.]

On the 15th of May, 1558, Christian, his eldest son, opened the sessions of the faygraf, or the sacra tribunal for his master. The summons required the accused to appear at a certain hour at the appointed spot within a fortnight after its delivery, to answer for his base and criminal conduct before the sacred tribunal, or otherwise to be deemed guilty of an act of high treason, and the punishment, which was inflicted in the usual manner, was to prevent him from appearing in contempt of the non-appearance. If the accused attended the summons, the accused swore upon the sacred book that he and his witnesses had no reason to fear the tribunal, and his witnesses were heard. The judges were all armed and dressed in black gowns, with a cowl that covered their faces like a mask. When the sentence was pronounced, the execution of it was immediately ordered, which was performed in the presence of all the members of the order, the condemned (who came under a kind of safe conduct) was dismissed, with the warning that his life was forfeited, and that no power on earth could withdraw him from the deserved punishment. However, unknown to the schaffe, the condemned, who were sentenced to death, had in their possession a letter ordering them to surrender themselves before the tribunal, and to make the best of their escape, while the execution was being performed. The condemned, who were sentenced to death, had in their possession a letter ordering them to surrender themselves before the tribunal, and to make the best of their escape, while the execution was being performed.

The power of this tribunal was greater than that of the Holy Inquisition; it struck terror into all Germany, and especially in Westphalia, where it originated. Prince Palatine (?) William, who wished to establish the same law in his dominions, was prevented by the violent resistance of the people, and was himself defended by the authorities, which gave him refuge in the monasteries and churches of the Holy Roman Empire.
The formation of these teeth is beautifully shown in four preparations in the museum of the Royal College of Surgeons in London. No. 329 is the anterior part of the right ramus of the lower jaw of a young lion, exhibiting the teeth together with the gums in which they are imbedded, and the border of soft parts, or lip, with which they are surrounded. No. 330 is the anterior part of the upper jaw of a young lion injected, in which the body of the second or permanent lower premolar tooth, or cuspidatus, is completely formed, and the fang forming. The incisary is cut down in the direction of its axis to expose the cavity containing the pulp on which it was forming. There is one of the molars in the set of being shed, and the adult or permanent tooth is pushing into the gum. No. 331 is the counterpart, or opposite section of the same incisary; and No. 332 is the incisary of the jaw of the opposite side of the same lion, showing the whole of the pulp on which it was growing. (Catalogue, Physiological Series, Gallery, vol. i. p. 25.)

The articulation of the condyles of the lower jaw in which this formidable apparatus is set is so contrived as to cause its operation in the most efficient manner. These processes are situated in the same straight horizontal line; they are cylindrical and firmly locked in the transversely elongated glenoid cavities, the margins of which are so extended both before and behind the condyle that rotatory motion is impossible. The crowns of the molars or rather lacerating teeth are compressed and covered with enamel, as indeed are those of all the others; the molars terminate in pointed processes, and the lower teeth shut within the upper. Thus, when called into action, the teeth and jaws operate like the antagonist blades of a pair of scissors upon the substance submitted to their cutting edges. The canine teeth, the principal prong-like weapons of the head, are very long and large, especially in the larger cats. If we examine the cranium of a lion or tiger we shall be at no loss to discover the machinery by which this dental apparatus is worked.

The crista occipitalis, which is most strongly marked in the cats, is a sharp and prominent bony ridge rising from the upper and hind portion of the skull. Its chief use is for the attachment of the temporal muscle, and the size of the temporal fossa, and the strength and extent of the zygomatic arch depend upon the magnitude of that muscle. In no animals is this fossa larger than in the carnivora. It not only occupies the whole of the sides and upper part of the skull, but is still further increased by the prominent bony crest proceeding from the frontal, parietal, and occipital bones. The temporal muscles would indeed almost completely cover the cranium in many of these animals, were it not for their separation by the parietal ridge.

The zygomatic suture is so oblique that the temporal bone forms the whole superior margin, and the os malar the inferior edge of the zygoma.

In consequence of the construction which we have endeavored to explain, the lower jaw is capable of motion only upwards and downwards, and entirely incapable of that motion in a horizontal direction which is necessary to mastication, properly so called. Accordingly the cats cut and lacerate their food coarsely, and transmit it in large portions to the stomach, there to be acted on by the gastric juice.

The muscles of the neck and fore-quarter of the cats are especially powerful to give full effect to this part of their organization, and to enable the animal to drag or carry away its prey.
The five toes of the anterior, and four toes of the posterior extremities of the cats are armed with very strong, hooked, side-compressed sharp claws. These extremities, the exterior ones especially, thus become powerful instruments for reeling and self-defense by the prey. The muscles that are to yield these weapons are of great strength; those of the fore-arm especially, which in the lion and tiger offer the same arrangement for flexion, extension, prono-translation, and supination, as is observed in men, are highly developed, and the blow alone which the animal can deal with this hand is frequently fatal. It is asserted that the Bantul tigers have been known to fracture the skull of a man with one stroke of its heavy paw. The claws, by a beautiful confirmation, are always preserved without effort from growing out with external bones, so as to keep them sharp and ready for action. There are some interesting specimens in the Museum of the Royal College of Surgeons in London, which will illustrate this provision. No. 257 of the "Physiological Series, Gallery," of the right fore-foot of a lion, with the last phalanx retracted on the ulnar side which from the case of the foot is the outer side of the second phalanx. This state of retraction is constantly maintained, except when overcome by an extending force, by means of elastic ligaments, two of which have bridges placed beneath them in the preparation. The principal one arises from the outer side of the third phalanx, and is inserted into the upper angle of the last phalanx; a second arises from the outer side and proximal end of the second phalanx, and passes obliquely to the outer side of the base of the last phalanx; a third, which arises from the inner side and proximal extremity of the second phalanx, is inserted at the same point as the preceding. The tendon of the flexor profundus performs, which is the antagonist of the ligaments, has been drawn out. No. 257 A is a toe from the left fore foot of a young lion, with the last phalanx drawn out, as in the action of the flexor profundus. The same ligaments are shown as in the preceding preparation, together with the insertion of the flexors and extensor tendons. In order to produce the full effect of drawing out the claw, a corresponding action of the extensor musculature is necessary to support and fix the second phalanx; by its ultimate insertion in the terminal phalanx, it serves also to restrain and regulate the actions of the flexor musculature. A bridge is placed beneath that part of the extensor tendon which passes under one of the elastic ligaments to be inserted into the base of the last phalanx immediately above the articulation. In both preparations lateral processes of tendon may be observed going to the under part of the base of the phalanx, which are partly inserted there, and partly lost in the integument; they are given off from the extensor tendons as it passes over the proximate phalanx, and are passed by ligamentos fibers from the side of the same phalanx. No. 258 is a toe from the right hind foot of a lion, with the last phalanx drawn out, and the elastic ligaments put on the stretch. As the phalanx of the hind foot is retracted in a different direction to that of the fore foot, i.e., dexterly and not by the side of the second phalanx, the elastic ligaments are differently disposed, as may be seen by comparing this with the preceding preparation. The outer ligament is of a flattened triangular form; it arises from the whole outer side of the middle phalanx, is strongest at the anterior margin, and is inserted at the superior angle of the last phalanx; the inner ligament is of a rounded form, arises from the inner side and distal end of the second phalanx, and is also inserted at the superior angle of the last phalanx, which is consequently drawn back in the diagonal of the elastic forces.

No. 258 A is the innermost toe or pollex of the right fore foot of a young lion, exhibiting a disposition of the elastic ligaments and mode of retraction similar to the toes of the hind foot; but here the inner ligament is of the flattened triangular form, and the outer one rounded. The latter passes between a division in the extensor tendons, one part of which is inserted in the base of the last phalanx just above the articulation; the other part into the outer side of the base of the phalanx, and into the integument.

The class FELIDAE has been divided into three families, the Felidae, the Pantheridae, and the Verrucosidae. The former consists of the true wild cats, the true lions, tigers, leopards, and jaguars, which are all terrestrial in their habits, and in the course of their careers are more or less solitary. The Pantheridae includes the bears, which are also terrestrial, but commonly live in society in the forests. The Verrucosidae is a family of very small animals, the smallest of which is the mouse, and the largest of which is the elephant. It seems scarcely necessary, adds the able author of the foregoing description, to allude to the final intention of these beautiful structures, which are, with some slight modifications, common to the genbus Felis. The class henceforth retracted within folds of the integument, are preserved constantly sharp, and ready for their destined functions, not being bluntcd and worn away in the ordinary progressive motions of the animal; while at the same time, as it is only brought in contact with the ground, the uncommonly contributes to the useless tread of the feline tribe. (Limb.)
each other at nearly right angles. The base of the claw is received into a groove in the body of the bone, to prevent its being pushed backwards in the violent action of the paw. The two parts of the bone form a species of hook or crotchet. The superior end of the phalanx in this state of repose is placed almost vertically; while the other extremity lies nearly parallel to the second. The articulation is at the upper end of the vertical portion, and the flexor tendons, passing over the upper part of the bone, are strongly fixed to the outer portion. The action of the flexor profundus causes the whole bone to move through 90° round the end of the second phalanx. (Dr. Traill.)

Having laid before the reader the mechanism of the parts more immediately concerned in the capture of the prey and the separation of its flesh, we must notice another organ which in the cats is used for other purposes than those of mere taste and deglutition. The roughness of a domestic cat's tongue is familiar to every one, as well as the action of lions and tigers in licking the bones of their prey in order to detach any remnants of flesh that may be adhering thereto. This is effected by numerous papillae, which are differently arranged in different species, some having them in straight rows, others in alternate lines; but in all the points are directed backwards. In the Museum of the Royal College of Surgeons are preparations well illustrating the structure of the tongue in these animals. No. 1599 exhibits the tongue and larynx of a young lion injected. The tongue is of considerable length, in consequence of the distance at which the larynx and os hyoides are placed behind the bony palate. The soft palate is of a proportional extent. All that part of the tongue which corresponds to the soft palate is smooth; as it advances forwards it is covered with large soft papillae directed backwards; then there are four large fleshy papillae, anterior to which the simple conical papillae continue increasing in size to near the tip of the tongue; the strong ciliated spines with which they are armed have been removed, showing the vascular secreting surface beneath. With the larynx there are preserved the thyroid glands and part of the wide trachea. No. 1510 is a portion of the cuticular covering of the smaller posterior conical papillae, from the preceding tongue fibres. No. 1351 shows a portion of the cuticular covering of the anterior papillae of the same tongue. At the fore part of the base of each of the larger spines may be observed a group of small gustatory papillae. No. 1512 is the extremity of the tongue of a lion, with the cuticular covering of the papillae removed from one side; and No. 1513 is the anterior part of the tongue of a lion, with the cuticular and spiny covering of the papillae preserved. (Catalogue, Physiological Series, Gallery, vol. iii. part 1. p. 192.) Mr. Owen remarks, that in the cats generally the concretion of the os hyoides to the cranium is not by a long elastic ligament, as in the lion, but by an uninterrupted series of bones, and that this latter structure exists in the Ocelot (Felis yucateca). (Zool. Proc. 1832.)

This leads us to the other

Digestive organs.—In the cats the salivary glands are small, as might be expected where it can hardly be said that mastication is exercised. The stomach of the lion is divided by a slight constriction in its middle, into two portions. Its coats, particularly the muscular coat, are very strong, as in most of the Carnivora. Blumenbach observes, that in most carnivorous quadrupeds, particularly those of a rapacious nature, the stomach bears a considerable resemblance on the whole to that of the human subject. So, according to Lawrence, in the domestic cat, a flesh-eating, carnivorous animal, approaching in its constituent elements more nearly to those of the animal than that of the herbivorous tribes, is more easily reduced into the state which is required for the nourishment of the body in the former than in the latter case of the Carnivora. A portion of a cylindrical form, has no cul-de-sacs; the esophagus opens at its anterior extremity, and the intestine commences from the posterior, so that every thing favours a quick passage of the food, which receives no mastication, and is reduced into a very small portion of the alimentary canal, when compared with the body, is extremely short, being as 3 or 5 to 1. It is worth noticing, that in the domestic cat they are as 5 to 1, but in the wild cat they are only as 3 to 1. Some of the Carnivora have been described as" and those with this appendage it is constantly small and uniform in its cavity. In the Museum of the College of Surgeons are four preparations, Numbers 693 to 696 (Gallery), both inclusive, showing the structure of the intestines of a lion. No. 724 is a portion of the termination of a lion, with the caecum or caput coli injected. The caecum is simple, resembling that of the Surticato (Rhyzana tetradactyla of Illiger), with its apex similarly occupied by a cluster of glands, in the form of a circular form, but it is situated on a valvular prominence in the large intestine. No. 730 is the injected colon of a lion. The longitudinal muscular fibres are very strong, and are disposed around the whole circumference of the intestine, which is not covered by a serous membrane. The lining membrane is smooth, and is thrown into zig-zag rugae. No. 735 is a portion of the rectum of a lioness, showing the strong round fasciculi of longitudinal fibres forming the outer stratum of the muscular coat, part of which has been removed down to showing the stratum of circular fibres. The intestinal glands of the ileum in the lion are shown by No. 757. No. 866 shows the liver of the domestic cat, and its subdivision, as in all carnivorous quadrupeds, into a great number of lobes. The second lobe from the porta, or cystic lobe, is deeply cleft for the insertion of the suspensory ligament; to the right of this cleft it is perforated for the lodgement of the gall-bladder. No. 887 is the cystic lobe of the same species, showing that the gall-bladder is situated on the hinder side of the large lobe. (Catalogue, Gallery, Phys. Series, vol. i.) Blumenbach remarks that the ductus cholecysticus forms a pouch between the coats of the intestine for receiving the pancreatic duct in the cat. No. 821 in the Museum of the College of Surgeons displays a portion of the termination of the hepatic and pancreatic ducts of a lion. A black bile is passed into the duetum comnis cholecysticus, and a white one into the pancreatic duct; the mucus coat of the intestine is laid open to show their junction. The orifice of a distinct pancreatic duct is preserved. No. 837 is the spleen, with a portion of the duodenum and pancreas of a domestic cat. The spleen is of an elongated trihedral form, attached to the stomach by a duplication of peritoneum inclosing its vessels; this duplication of course passes off from the angle forming the junction of the two sides. The spleenic vein is seen passing from the spleen along the pancreas, which extends from it to the duodenum. No. 840 exhibits the stomach and duodenum, spleen, and pancreas, of a small animal, apparently of a cat. The parts have been injected, and show remarkably well the principal peculiarities in the form and disposition of these parts as they exist in the feline tribe. A part of the osophagus has been inverted, to show the traverse section of its inner lumen. The stomach exhibits the broad dilated cardiac and the narrow tubular pyloric divisions, which are acutely bent upon each other; in the duodenum may be observed its regular extended curve, and its round lumen, by which much greater freedom of motion is allowed to this portion of the intestinal canal than in the human subject. The small omentum is seen attached, not in a regular line along the lesser arch of the stomach, but advancing in an irregular scolloped manner upon its anterior surface; an analogous process of peritoneum is attached
The great omentum anteriorly is continued from the greater arch of the stomach, from the left end of which it is continued down the spleen, and posteriorly along the pancreas, which is thus supplied with a complete network of blood-vessels. The blood-vessels are thus supplied with a complete network of blood-vessels. The blood-vessels are thus supplied with a complete network of blood-vessels.
complicated and extensive. The inferior and anterior turbinate bone is of an elongated form, and contracted at both extremities. Its posterior and inferior extremity is attached to the outer paries of the nasal passage, below the middle of the turbinate bone: from this point it extends obliquely upwards, as it crosses the anterior extremity of the middle bone, and then diminishing in size to its anterior and superior attachment behind the external nares, forms the anterior part of the part. And here the inspiration must first impinge upon this bone. Its nasal surface is pretty uniform, presenting only one curved groove, parallel with and near to the lower margin of the bone, in this respect differing widely from the lower turbinate bone seen in the cranium of a young human, in which it is only two-thirds of the same section, and characterized. In the preparation the outer lamella has been cut away to show the subjacent fold. The whole being minutely injected, the vascularity of the pituitary membrane extended over this vast and complicated surface is well displayed. The pituitary membrane is of a thicker and more vascular portion of the cavity, where it must receive the first impression of the external air. A portion of the pituitary membrane is reflected from the base of the middle turbinate bone, showing the fibres of a series of large veins joined, giving it a long and short axis, the long axis being vertical. In the Museum of the College of Surgeons there is a preparation (No. 1560, Gallery) of section of the cranial bones of a young human, including the inner ear of the left side. A part of the menitus is preserved with the membra tympani, and the cavity of the tympanum is laid open, showing the convexity of the membrane turned towards it, as in most mammalia. (Cata-
logue.)

Sight.—This sense is sente in the Felidae, and they have the nictitating membrane very large and moveable. The pigment, as far as is known, is, generally speaking, of two colours, and the anterior perforation of the iris is formed of two segment of large circles joined, giving it a long and short axis, the long axis being vertical. In the Museum of the College of Surgeons (No. 1710, Gallery) is the eye of a lion minutely injected by the ciliary arteries, and the sclerotic, choroid, and retina, all preserved, and, indeed, to show the vascularity of that tissue. No. 1730 is a preparation of the eye of a lion, showing the broad path of tapetum lucidum below and also a little above the insertion of the optic nerve. The succeeding numbers to No. 1733 inclusive form a series of eyes of other species of the cat in the lion and the leopard. John Hunter, Observations on certain parts of the Animal Economy, 2nd. edit. p. 243) remarks, that when the pigmentum is of more than one colour in the same eye, the lighter portion is always placed at the bottom of the eye, in the shape of a half-moon with the circular arch upwards; the straight line or diameter passing almost horizontally across the lower edge of the optic nerve, so that the end of the nerve is within this lighter-coloured part, which makes kind of a semicircular swirl. It is observable that this part is applied to the cat, lion, dog, and most of the carnivorous tribe. Mr. Owen observes that the Cheetah has the circular pupil of the Lion, Tiger, Leopard, and Jaguar. (Zool. Proc. 1833.)

NATURAL HISTORY.

The ostoecology of the Felidae presents little for the distinction of species, except size, and in no animals does species character depend upon size and colour more entirely than is the case in this family. As such, for instance, as that pointed out by Mr. Owen between the skull of the lion and that of the tiger; but, taken as a whole, the skeleton of a cat is very nearly the miniature representation of the skeleton of a domesticated dog, and the bones of the skull of the domesticated dog are smaller than those of the lion. The reason for this is that the disposition of many leading zoologists has been to bring all the numerous species under one genus. Linneus arranges them under Felis, the third genus of his order Ferae, placing them between the dogs (Canis) and Vizerra. Iliiger assigns to them a position in his order Felucuta, with the title Sanguinaria. Cuver places them under the name of Les Chats (Felis, Linn.) among his Carnivores, the third family of his Carnassiers, between the Hyenas and the Seals. Temminck regards the genus Felis as an indivisible group zoologically, but separates them into two sections, the first comprising those which are found in the Old Continents, viz., the domesticated dog, the lynx, and the wild cat or folly; the second those which occur in the New World, of which he enumerates nine species. C. L. Bontempaire, prince of Musignano, admits into his family Felina the generic Proteas, Hyenas, and Proiodon, a very questionable arrangement, but which is admitted by many zoologists. It is characteristic of the genus Felis are square, as a genus by Mr. Gray, under the title of Lynches; and the Hunting Leopard, Felis jubata, is characterized, generally by Wagner as Cynathrus. The whole family may be popularly divided into the Tigers, Leopards, Lynxes, and Wild Cats, or Cats properly so called, the two latter terms being more particularly applicable to the smaller forms. Under the first four titles will be found in this work the notices of those subdivisions, and we shall in the present article treat specially of the latter subdivision only.

Geographical Distribution of the Felidae.—The form is widely spread over the face of the earth; but reaches its most powerful development in the more southern regions of the earth, the exception, however, of New Holland and the islands of the Southern Pacific, species are found in every part of the world, excepting the arctic regions; and some extend far beyond the limits of moderate temperature and even into territories where the severity of the cold is almost arctic. No species has been discovered common to the Old and New World.

Cats.

Among the smaller species of the great feline family our attention is naturally first directed towards that domestic animal which is found in almost every house. In this case, says the author of that interesting little book The Menagers (London, 12mo. 1800). 'Here we are introduced to some of the more curious and productive parts of the animal world; there is no doubt that the head of the domesticated cat is the original head of the domesticated dog. The wild cat of the European forests is the tame cat of the European houses; the tame cat would become wild if turned into the woods; the wild cat at some period has been domesticated, and its species has been established in almost every family of the Old and New Continents.' There is good authority for this assertion; but the origin of the domestic cat has been attributed to a very different source, and there are not wanting zoologists who even now hold that the parent stock of that useful animal is still undiscovered.

Rüppell during his first travels in Nubia discovered a cat (Kleinengöthe Katze, Felis manicaulata) of the size of a middle-sized domestic cat, and much smaller than the Felis manicaulata species. The Catus feraus Linnaeus. All the proportions of the limbs were on a smaller scale, with the exception of the tail, which is longer in Felis mani-

The woolly or ground hair is in general of a dirty brownish, darker on the back and posterior parts, and becoming gradually lighter on the anterior and lateral parts; longer hair of a swarthy dirty white, so that the appearance of the animal is greyish-yellow. Skin of the edges of the lips and of the nose bare and black. Beard and bristles of the eyebrows blackish brown, the eyebrows black, the eyelids black; iris glaring yellow. From the inner corner near the eye there is a dark-brown streak running in the direction of the nose, and there is a white streak as far up as the arch of the eyebrows; between these two streaks is another greater one; the nostril is indicated on the forehead by the tips of the ears and under the eyes. Outside of the ears grey, inside white and without tufts of hair. Eight slender black undulating lines arise on the forehead, run along the occiput, and are lost in the upper part of the neck. Cheeks, throat, and anterior part of the neck shining white. Two ochreous-yellow lines spring, the one from the outer corner of the eye, the other from the middle of the cheek, and meet both together under the ear; and two rings of the same colour below the ears there are spots of ochreous yellow. Chest and belly dirty white with similar spots or semicircular lines. A dark streak along the back becomes lighter as it rises over the shoulders, and darker on
Before we quit this part of the subject we must not forget that among the animals seen by Rüppell in Kordofan he considered a new species of cat.

Mr. Bell (History of British Quadrupeds, London, 1837?) first addresses himself to the question whether the common wild cat is the original from which all our domestic cats have sprung, according to the general opinion of the older naturalists. He reasons that there are many reasons for believing that this opinion is entirely erroneous. In the first place, he observes, the general conformation of the two animals is considerably different, especially in the length and form of the tail, which in the wild cat is strong, robust, and at least as large towards the extremity, as at the base and middle, whilst that of the domestic cat tapers towards the apex. The fur too of the former, he remarks, is thicker and longer; and although these qualities do somewhat like those which occur in some individuals of the ordinary species, there are, even in this respect, distinct points which are scarcely to be considered otherwise than as essentially specific; as, for instance, the termination of the tail in a black tuft, which invariably marks the wild cat. To these distinctions may be added the difference of length of the intestinal caecal, though domestication might account for much of that.

Bell returns to Mr. Bell. With regard to the alleged crossing between the wild and the domestic breeds, 'it is not without much reflection on the matter that he has come to the conclusion, that the opinion of the intermixture, repeated and transmitted from one to another till it has become an uncontested dogma, is erroneous, and has its foundation in mistaken facts.' Mr. Bell then notes Rüppell's Felis manulica above described, and comes to the conclusion that Rüppell has assigned the origin of our house cat is still farther removed from it in essential zoological characters than even the British wild cat, to which it had been previously so generally referred; that, as in the case of so many of our domesticated animals, we have yet to seek for the true original of this useful, gentle, and elegant animal.'

We must confess that we do not see much difficulty in reconciling with the opinion of Rüppell, Temminck, and Sir William Jardine upon the evidence at present known, it is not attempted to be denied that the Egyptians had a domestic cat, and we think there can be little doubt that the domestic cat of the Egyptians was identical with Felis manulica. This extraordinary people, whose existence is now only to be traced in their wonderful and enduring monuments, were, when in their high and proud state, the centre of civilization, and we can see no reason why other nations, who borrowed so largely from them, should not also have received their domestic cat among the manifold benefits of civilization. The animal, when introduced, would be liable to all the usual consequences of domestication and an intermixture, according to the localities of the various nations who obtained it. We can see no reason why the domestic cat, from whatever source derived, should not breed with the wild cat in Great Britain, and we believe that it has so bred.
The arguments derived from the difference between the tails of the wild cat, of the domestic cat, and of Felis ma-
riculata do not seem to us to carry much weight. We
cannot shut our eyes to the effect of domestication on this
organ among the dogs, which gives us every variety, from
the well-clad to the half-naked. Nor is this confined to
that of the greyhound, which is so scantily furnished
as to owe one of its excellencies to being 'tailed like a rat';
but, in some varieties, that long tail is reduced to
almost no tail at all. There are also tail-less cats, as
Mr. Hall's own instance of a Cornish 'rattic' illustrates.

Still the doubt thrown on the question by a zoologist of
so much experience and skill as Mr. Bell is deserving of
the most serious consideration, and should stimulate those
who have the opportunity to investigate the subject upon every
occasion offered to do so.

The domestic cat is Le Chat of the French, Gatto of the
Italians, Gato of the Spanish and Portuguese, Katze of the
Germans, Cyprus Kat and Huvskat of the Dutch,
Katt of the Swedes, and of the ancients, British, and Felis domestica, sex Catus, or Ray.

The varieties, as in all cases of domestication, are
diverse: among the most noted are the Tabby, the
Torinese, the Chartreux, which is bluish, and the Angora
cat with its long silky hair. The domestic cat is but too
large for the art of domestication, and it is difficult to say
what end is answered by the prolonged agenies of fear and torture which the poor
cat is subjected to, under which it receives the comp de
grace. This refined cruelty appears to be confined to mice,
which are not considered as a delicacy; if a cat is sent on
a bird, she does not trifle with it, but, conscious of its chances
of escape, bites off its head or wounds it mortally at once.

We insert the following from Pennant, though it has
been often quoted, not only as illustrating the manners of a
people we discount as that of Inverness, which died in the year
1248, after a reign of 33 years over South Wales and of
eight years over all Wales, but also on account of the
reflection at the end, which we think worthy of the
consideration of those who are interested in inquiring whence the stock
of the domestic cat was derived.

'Our ancestors, Pennant, 'seem to have had a high sense of the utility
of this animal. That excellent prince, Hoorel Ddo or Hoorel the
Good, did not think it beneath him, among his laws
relating to the prices, &c., of animals,
p. 247, 248) to include that of the cat, and to describe
the qualities it ought to have. The price of a kitten before it
could see was to be a penny; till it caught a mouse,
two
pence. It was required besides that it should be perfect in
its senses of hearing and seeing, that it should be
quick-witted and well-natured. If it failed in
any of these qualities, the seller was to forfeit to the buyer
the third part of its value. If any one stole or killed the
cat, which guarded the prince's granary, he was to forfeit a
march ewe, its fleece, and labour, and loss, as well as
punishment, as the price prescribed for its tail (the tail touching
the floor) would form a heap high enough to
cover the tip of the former.

This last quotation is not only curious, as
being an evidence of the simplicity of ancient manners, but
it almost proves to a demonstration that cats are not
originals of these islands, or known to the earliest in-
habitants. The large prices set on them (if we consider
the high value of species at that time) and the great care
taken of the improvement and breed of an animal that
mutilates, defecates, and urinates in the open air, is
certainly not being little known at that period.' (British Zoology.)

The Wild Cat is Le Chat sauvage of the French, Gato
monte of the Spaniards, Wild Katz and Baumritter of
the Germans, Wild Kat of the Danes, Cath good of the
ancient Scots, and small quadrupeds of the Ancients, Klein, Felis Catus of Linnaeus, and Felis sylvatica of Merrick.

Description.—Head triangular, strongly marked; ears
rather large, long, triangular, and pointed. Body strong, rather
more robust than that of the domestic cat. Tail of
usual length; fur, when the animal is in motion, directed towards the extremity. Fur soft, long, and thick; colour
of the face yellowish grey, with a band of black spots towards the
muzzle; whiskers yellowish white; forehead brown.

It is worthy of remark that all those names are the same as the Latin
cats, whence the diminutives of Felis are derived, and this is somewhat in favour of Egypt.
We are thus brought nearer to Egypt, its probable origin. The
Greek word eidos (μεταφρασθείς) is an odd one, and helps us nothing, being apparenly a derivative term.

head grey, marked with two black stripes passing from the
eyes over and behind the ears; back, sides, and limbs grey,
darker on the back, paler on the sides; with a blackish
longitudinal stripe along the middle of the back, and nu-
merous paler curved comas on the sides, which are darker
at the tail and become obsolete towards the belly,
which is nearly white. Tail annulated with light grey and
black; tip of the latter colour. Feet and insides of the
leg yellowish grey; soles black, at least in the male, of
which sex Temminck declares it to be a peculiarity. Colours
of the female paler, and markings less distinct. Dimen-
sions differing greatly according to the statement of various
naturalists. Medium size of full-grown male:

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Female rather smaller. (Bell.)

Temminck gives the average length as three feet.

Locality.—All the wooded countries of Europe, Germany
especially; Russia, Hungary, the north of Asia, and Nepal.
The animal is larger in cold climates, and its fur is there
held in higher estimation.

In Britain it was formerly plentiful, and was a beast of
choice, as we learn from Richard the Second's charter to the
abbots of Peterborough, giving him permission to hunt the
dare, fox, and wild cat. The fur in those days does not seem
to have been thought of much value, for it is ordained in
Archibald or Corbly's canons, a.d. 1127, that no abbess or
nun should use more costly apparel than such as is made
of lambs' or cats' skins.

The wild cat is now rarely found in the south of
England, and even in Cumberland and Westmorland its
numbers are very much reduced. In the north of Scotland
and in Ireland it is still abundant.

Among the foreign wild cats may be enumerated Felis
Chaus, Guilt.; the Mota Rahn Manjur or Larger Wild
Cat of the Malaysis (a lynx); and Felis jorquata, V. Cuv.; the
dian Rahn Manjur or Lesser Wild Cat of the
Malaysis; Felis mouros, the Moorni Cat, Hodgson,
from the Moorni Hills in Nepal (Zool. Proc., January,
1824). Felis planocara, Vigors and Horsfield, departs in
many points from the true cat, and approaches Prionodon
in others. Felis temminckii of the same zoologists, which
is near the domestic cat in size, comes nearer in form—it is
uniform in colour—to the true Tiger Cats, which will be
noticed under the article on Tigers.

We must not omit to
notice the Felis Cafer, a specimen of which is to be seen in
the South African Museum (No. 28) specimens of which
have been met with, as the Catalogue informs us, in what-
ever direction South Africa has yet been explored. 'It ex-
hibits certain fixed peculiarities which unequivocally
constitute it a distinct species from the domestic cat, which is
occasionally found wild in the colony, and with which the
former has sometimes been erroneously confounded. It
possesses a full share of the ferocity of the feline tribe;
and dogs which have once had a specimen of its pugnacious will
and power show a considerable degree of caution in encountering it a second time. It is frequently found in such flats as chance to be covered with long grass or with a moderate growth of brushwood; and when disturbed by the approach of men or dogs, usually seeks shelter in thickets, or the burrows of other animals, about which are supported small quadrupeds and birds, and is an especial enemy to those of the latter which have their nests upon the ground. (Catalogue of South African Museum.)

FOSSIL FELIDAE.

In the second or Miocene period of the tertiary formations we have hitherto found the first traces of large fossil cats. There are no less than four species of these great cats, some as large as a lion, enumerated by Professor Kaup from the fossil beds near Altwied, near Mayence. These remains are preserved in the museum at Darmstadt. The professor names these Felis aphanista, F. priscus, F. syringa, and F. antediluvian. In the third and fourth (or Pliocene) divisions of the tertiary period, we find that the number of terrestrial herbivorous quadrupeds become more abundant; and, with their numerical importance, the Carnivora, whose agency was required for keeping them down, increase also. The remains of Felis occur in the ossiferous caverns, such as those of Kalksheide, about 12 miles south of Mainz. The cave in Kalksheide the only remains that had been found of the tiger species, according to Dr. Buckland, were two large canine teeth, each 4 inches in length, and the upper tusks of a tiger; these were in six inches of the largest lion or Bengal tiger. Mr. Cottle of Bristol procured from Oreston Cavo, Plymouth, among many other remains, two tusks of a tiger, one 34 inches long, the other 35, one from the upper, and one from the lower jaw. Dr. Beech raised in the same work (Reliquiae Diluvianae) the observations that Cuvier had then lately found the tusks of an extinct lion or tiger in the breccia of Nice, and that Mr. Pentland had discovered the tooth of the same extinct tiger in the breccia of Antilles. Bevard, the Abbé Crozet, and John Smith, in the works on Fossil Cats, who were the principal authors of these remains contained in the ossiferous rocks of Auvergne (Puy de Dome) the following species: Felis Isidoriensis, F. brevirostra, F. pardinus, F. aterrinitus, and F. megalotus.

FELIX I., a native of Rome, succeeded Dionysius the Calabrian as bishop of that city a.d. 271, and suffered martyrdom in 275. He was succeeded by Eutychianus, bishop of Luni. There is extant an epitaph of Felix to Maximus, bishop of Alexandria, against Paul of Samosate.

FELIX II., (by some styled III.), an anti-pope who assumed the title of Felix II. in the schism against Liberius (A.D. 355-66), was a native of Rome, and succeeded Simplicius in the year 403. He had a dispute upon questions of ecclesiastical supremacy with Acacius, bishop of Constantinople, who was elected emperor and by most of the eastern clergy; in consequence of which a schism ensued between the Greek and Latin churches, which continued after the death of Felix, which happened in 412. He was succeeded by Gelasius I.

FELIX III., also called IV., a native of Beneventum, succeeded John I. a.d. 526, and died in 530. He was succeeded by Boniface II.

FELIX V. [AMADEUS VIII.]

FELLOWSHIP in books of arithmetic, the rule by which profit or loss is divided among those who are to bear it, in proportion to their investments or interests in the transaction. It is usual to divide this rule into two parts, of which the first supposes all the investments to have been made and observed, and the second is supported by the managers to have employed their money during different times. One simple case of each will be sufficient.

Question 1. A, B, and C embarked 10l., 9l., and 8l. in a venture which yielded 30l. of profit. How much belongs to each?

If 10-9-8+4+2, or 27 adventurers embarked 1l. each, it is clear that each of them should have the 27th part of 30l. Let 10 of them assign their shares to A, 9 to B, and 8 & C, and we have an equation in question. That is A, should have 10-27ths, B, 9-27ths, and C, 8-27ths of the whole profit.

Question 2. A profit of 30l. was realized by A embarking 10l. for two months, B embarking 9l. for three months, and C embarking 8l. for four months. How much ought each to gain?

Here the 1l. of A and the 1l. of B are differently circumstanced; the second was employed half as long again as the first, and consequently should gain half as much again. Now let one pound sterling employed during one month be called a share: then A invested 20 shares, B 27 shares, and C 32 shares. Therefore, 20-27ths, 27-27ths, and 32-27ths of 30l. should have 20-27ths, B should have 27-27ths, and C 32-27ths of the gain.

The first is a rule of very frequent occurrence, but the second is rare, for it seldom happens that money is withdrawn and an undertaking, except upon some special agreement.

FELLOWSHIP (in a college) is an establishment in the college entitling the holder to a share in its revenues. The fellows are a part of the corporation. [College.] Fellowships are not to be confused with a scheme or with the scheme of the original founder; or ingrained, that is, endowed by subsequent benefactors of a college already established. Where the number of fellows is limited by the original foundation, new fellows cannot be made members of the society, whether the number is not limited by the charter, it seems that the corporation may admit new fellows as members, who will be subject to the statutes of the original foundation in all respects. Graduates of each several college are in general entitled to one fellowship to enter, according to an establishment to which they are elected after having undergone an examination by the master and fellows in being. But in some cases special rules which control the election of fellows have been made, by which a certain number of those who have not been incorporated as fellows are made to be incorporated as such by the college, and to hold their office for a certain number of years. Thus, in the college of St. John's, there are four fellows, who are to hold their places for 250 years, and to be accountable to the college for the performance of certain duties. If any fellow shall be absent from the college for three years, he shall be held liable to be dismissed. Fellows are liable to be dismissed for any cause, and may be dismissed by the college. FELLOWSHIP, whether by law or by custom, is an irrevocable bundle of rights and powers for life, and is a preferential interest in the property of a corporation, and is transferable in that sense only. The Fellows of a college are frequently the founders of the college, or the college is founded upon the estate of a fellow. Fellows are also used to denote the holders of one or more of the offices, who are in general the teachers of the college, and are frequently the professors of the college, and are not to be confounded with the fellows of a college. The Fellows of Trinity College are the fellows of the college, and are in general the teachers of the college.
FELSAPAR, a mineral which occurs in every part of the earth, and one of the most common of all. It occurs crystalline and massive. The primary form of the crystal is an oblique rhombic prism. Colour white, grey, green, red, of different shades. Transparent, translucent, or opaque. Lustre vitreous. Sp. gr. 2.5, 2.6. Hardness 6.0. Streak greyish, sometimes parallel to the terminal plane and oblique diagonal. Fracture conchoidal, uneven.

The variety known by the name of *adularia* occurs in large crystals, especially in Mont St. Gobard. Moonstone is a variety of felspar which has a pearly lustre, and when cut and polished is chatoyant; the finest specimens of this are from Ceylon.

**Marl:** A soft, friable deposit of lime, often of Putrid origin, composed of the remains of shellfish and algae. It is generally grey, and is often found as a variegated deposit, formed by the alternation of beds of lime and sand. It is a common constituent of the stratified deposits of the sea. It is often used as a material for building, and is also used for the manufacture of lime and cement.
In wild mountain pastures in Scotland and Ireland it is usual to separate the properties of different individuals or that of parishes by rough stone walls put together without any mortar. The materials are generally at hand, and a rough and efficient fence is made without much labour.

Some of these walls are built with considerable skill, and are very durable; especially if the stone is of a nature to split with a flat surface; in which case a dry wall may be built. The materials are generally at hand, and a rough and efficient fence is made without much labour.

Sometimes a layer of mortar is laid on the stones at a little distance from the ground and another near the top. The coping is usually made of flat stones, which are sometimes placed on edge to give direction to the wall, and are sometimes set together forming the top of it or set in mortar, forming a very rough coping, which is not easy to get over.

Where stones are not at hand, or less trouble is taken, a high bank of earth faced with sods of grass is sometimes used for a wall. This is not so durable and is more easily surmounted, unless a hedge of some kind be planted along the top. Turf seed is often sown for this purpose, and soon forms an excellent fence, which by proper care and chipping will last a long time. But the most common kind of fence for fields is the hedge and ditch, the bank being raised with the sods and earth taken out of the ditch, and the hedge planted in the side of the bank towards the ditch, or on the top.

Sometimes there is a ditch on both sides. In flat water meadows this is not always bad, as there is a fair ground to the water, and the bank may impede the natural flow of the water, and it will be necessary to cut through in different places to let the water running from above have an outlet into the ditch. In some parts of low lying heath lands, the idea of a ditch has arisen from the neglect of the surveyor in not attending to this circumstance and setting out the bank on the upper side. Where they are not required as drains, it is a great waste of land to have any ditches, and a simple hedge planted nearly in the same line as the soil will answer as well.

Of all fences a live hedge, which is carefully planted, and kept properly cut, and trimmed when it is grown up, is by far the best. [HEDGE.]

When a fence is required within sight of a dwelling, and it is desirable for it to be concealed, a deep ditch is sometimes dug, and a fence placed in the bottom of it at such a depth as not to appear above the level of the ground. This is called a sunk fence. Sometimes a wall is built against a perpendicular side of a ditch, and some very light hedges placed along the side, to be pointed on the level with the wall. This is called a ha-ha fence, a name given to it from the surprise excited in a person unacquainted with it, when he suddenly finds himself on the top of a wall which he used to believe to be a hill or bank. The fence is made for off sheep or cattle from a lawn or pleasure-ground without obstructing the view of the park or the fields, the ha-ha fence is very useful. A variety of light fences of iron have been invented for the same purpose: some of these are fixed and others movable; some have upright pieces of cast-iron as posts let into oak blocks sunk in the ground, and rods of wrought-iron passing through holes in the uprights: some have wire for the same purpose. But the most common iron fence is composed of separate wrought-iron posts, which may be used in the same way, and tied together by screw-caps and nuts. They are merely stuck into the ground, for which purpose they have the ends of the uprights sharpened and bent so as to form a foot. By having this bent point on one upright, and on the back-end of the other, they form a very firm basis when two hurdles are joined, the left foot of the one being strengthened by the right foot of the other. A very neat fence may be made at a small expense by using as posts pieces of young larch trees about four or five feet long, and about five or six inches in diameter, with the bark on, the iron rods through holes bored in them at certain distances from each other. A fence of this kind, five feet high, with five horizontal rods five-eighths of an inch in diameter, is an excellent protection against cattle, and takes up no ground. Any objection to the ditch and bank fence is that it takes up so much room. If the ditch is three feet wide, the bank will be the same. There is a foot along the ditch, and another along the bank, where the plough cannot reach; there are therefore eight feet lost. If the fields are squares of ten acres each, which is a convenient size, each field will have 1,329 feet of fence in length, taking up 1,500 square feet of land, which is nearly a quarter of an acre. If to this be added the outer fences against roads, woods, or commons, it will be found that nearly one acre in 25 is taken up by banks and ditches. It is therefore a great saving to have a simple hedge with any ditch whatever in the nature of an article with a proper fence.

It is usual in England to plant trees in the hedge rows; and it is owing to this practice that England presents such a rich garden-like appearance, wherever there is a hill bank there is a good hedge. The hedges here are a great detriment to the farmer; and where the land is highly manured, the trees draw off much of the rich juices. The prudent tenant considers this in the rent, and although the landlord may now and then sell some timber, he pays dear for it in general by the deduction from his income on their account. Stone walls have a dreary appearance to the eye, but they are excellent fences; they take up little ground, they draw nothing out of the soil, they harbour no birds, and they are the best cropped against the cattle, it is usual to make a dead hedge of stakes with bushes and brambles interwoven on the top of the bank; and if there is pasture land on the side where the ditch is, a post and rail fence is put up along the edge of the bank. In all hedge banks till the hedge is grown sufficiently not to be marked by the wall, when the branches are not interwoven, and the top of the hedge is finished with rods wattled in, it is called a side and elder hedge. When the branches are interwoven, and the roses are composed, the stake and elder hedge is always preferred.

Besides these common fences, there are various others of a light or temporary nature, which are chiefly used in gardens and pleasure grounds, and also when sheep only are to be kept out, or when a new quick hedge along an orchard or garden has been planted. A cheap and neat fence of this kind is made with stakes only planted in the ground, forming a series of St Andrew's crosses; or with osier or hazel rods worked between stakes like basket-work, either rattan, or the like; which are tied together with a sacking. When the branches are not, or only are used without stakes, it is called a foot hedge, when the branches are interwoven, and the top of the hedge is finished with rods wattled in, it is called a side and elder hedge. When the branches are composed, the stake and elder hedge is always preferred.

FENELON, FRANCOIS DE SALIGNAC DE LAMOTHE, was born at the Château de Fenelon, in Ponsard, in the year 1651. So rapid was his progress that he obtained a seat in the Estates-General at the age of fifteen. He was one of the select assembly at Paris, whether he had been called by his uncle, the Marquis de Fenelon, who afterwards fearing lest the praises of the world should create pride and vanity caused him to enter the seminary of St. Sulpice, and there live as a religious, and afterwards to take orders. His first work was a treatise, De l'Education des Filles, which is well known, and has been translated into our language. The intimacy which he formed with
Bosquet, and Bosquet's example, led him to write a treatise against heretics, entitled 'Du Ministère des Pasteurs,' in which heretics are attacked, though with more moderation than they had been by Bosquet. Fenelon being intrusted by Louis XIV. with a mission to Poitou, to convert the Protestants, nobly refused the aid of dragoons, and employed persuasion alone as an instrument of conversion. His conduct on this occasion gained him many friends. In 1692 he was appointed by the archbishop of Cambrai to the corporative benefice of the chancellor of the diocese, which brought him into attendance on the court. Though the polish and grace which pervade his writings extended to his conversation, he never seems to have been a great favourite of Louis; his political opinions always tended to blasted so far as to cause him to be dismissed from the court rather freely on the character of the king. Unwithstanding this, after he had been tutor for five years, Louis made him archbishop of Cambrai. Unfortunately, at the very moment when he had gained this elevated post, the very man who had been his benefactor, the king himself, was restored to his disgraces. He formed an acquaintance with the celebrated quietist, Mad. Guyon, who was at first in high favour with M. de Maintenon, and who was encouraged by her to favour her doctrines at St. Cyr. This lady was afterwards persecuted by Bossuet, and made him the instrument for this, Bosquet denounced him to the king as a heretic. To increase his troubles, his palace caught fire about the same time, and all his MSS. and books were destroyed. The persecution of Bosquet continued; and the protection of the queen-mother, who had at first encouraged them, was withdrawn. Bosquet required that the difference should be settled by a controversy: Fenelon would not accede to these terms, but offered to submit his book to the tribunal at Rome. His persecutor now succeeded to the post of archbishop of Cambrai, and endeavoured, though unsuccessfully, to involve Beauvilliers, governor to the duke of Burgundy, in his disgrace. Pope Innocent VIII., though strongly urged by Louis, was not willing at once to condemn a prelate so noted for his erudition and learning as Fenelon, and supported him by both parties. At last the papal letter arrived, and the archbishop of Cambrai was forced to submit; he signed a renunciation, and would have been restored to regal favour had not the celebrated romance of 'Telemaque,' which had once been published, been republished, and against his will through the treachery of a servant. Several passages in this work were suspected by Louis to be directed against himself; it was suppressed in France and rapidly circulated in Holland. Hearing of the unfavourable opinions which his successor was permitted to entertain, Fenelon resolved to remain quietly in his diocese. Cambrai being situated on the frontiers of France, he was visited by many illustrious foreigners. Fenelon's acts of benevolence were munificent; in the year 1709 he fed the French army and endowed with consequence the benefices which he marked that his political opinions were liberal; he had always conceived it just that the people should have a share in the government, and it was expected that the duke of Burgundy would have acted in accordance with his predecessors' views. But all hopes of this sort were cut off by the sudden death of that prince. Fenelon himself died in 1717.

The works of Fenelon are very numerous; consisting, besides the romance of 'Telemaque,' of a variety of religious and moral works; and are translated into every European language, and is read at almost every European school. Had it been written in this age, it is questionable whether its popularity would have been so great; the spirit of the Greeks is much better understood, and the taste of modern Europe is much more demanding. But it may be admired the language of 'Telemaque,' as well as the general accuracy of the writer's information on matters of ancient history and geography, will find it strange that the sentimental speeches, though good in themselves, should draw from the mouth of Homer heroic, who of all beings were the least mortalising, in the modern sense of the word. His religious and moral essays are only calculated for persons in whose mental constitution warmth and susceptibility are predominant, and who can suffer themselves to be led on by strong and eloquent passages. He is diffuse and tedious. So much does he make of the imaginative faculties, that he exults teachers to impress on the minds of children that the Deity is sitting on a throne, with very bright eyes looking through everything, and supporting the universe with his hands. Hence his natural theology is chiefly the ejaculation of a pious man admiring the works of Nature. In politics, Fenelon's opinions are far in advance of his age and country; in one respect, however, he is a moralist, and advocates, with great candour, the importance of the individual conscience, and boldly proclaims the injustice of levying taxes without the sanction of a parliament. A handsome quarto edition of his works was published at Paris in 1787.

FENNEC. [Fox.]
FENTON, ELIZABETH, was born in Staffordshire in the year 1683. Borned for designing the church, he was admitted a pensioner of Jesus College, Cambridge, in 1706. After taking a bachelor's degree, he was forced to leave the university, on account of his activity as a non-Jew. He became secretary to the earl of Orrery, and accompanied that nobleman to Flanders. After his return to England in 1706, he accepted the situation of assistant at Mr. Bonwick's school at Headly in Surrey, and subsequently became head-master of Oxford free grammar school at Sevenoaks. In 1727, John (afterwards Lord Bolingbroke) persuaded him to retire from this school, promising to do great things for him, which promises were never fulfilled. Lord Orrery again befriended him, and in 1730, he was appointed to the post of chaplain to the archbishop of Canterbury, and prefaced a life of the author; and in 1729 he published a fine edition of Waller. Through the recommendation of Pope, he became tutor to the son of Lady Trumbull; and when that occupation was at an end, she made him auditor of York.

All biographers bear testimony to Fenelon's character as an upright and honourable man. His poetical works are but few in number, and consist of short pieces, chiefly paraphrases from antiquities. As they have scarcely any claim either to elegance or originality, they may never be rescued from the neglect into which they now have sunk. The tragedy of *Mariamme*, like most of that time, is totally forgotten.

FEODIGRIMOSKILL.
FEOD [Feudal System.]
FEODOSIA. [Kaffa.]
FEOFFMENT (in law) is that mode of conveyance of lands or real hereditaments in possession where the land passes by force of law, without technically called, delivery, by way of a portion of the land, as a twig or a turf; or where the tenant being on the land the seffor expressly gives it to the seffes, &c.; or by livery in law or within view, i.e. where the parties being within sight of the land, the seffor refers it to and gives it to the seffes. A feoffment was the earliest mode of conveying real hereditaments in possession known to the common law. A grant [DARD; GRANT] was the mode used when lands subject to an existing estate of freehold, and when rents or other incorporeal hereditaments incapable of being conveyed in the common modes of conveyance were transferred. The term feoffment is evidently of feudal origin, its Latinised form being feoffamentum, from seffare or seffandre, to seff, to give a feud. The mode of conveyance is however of much higher antiquity than the feudal system, the word feud being common to all nations in rude ages. (Gibb. Trs. 386.)

It prevailed amongst the Anglo-Saxons, who gave possession by the delivery of a twig or a turf, a mode still common, particularly in the admission of tenants of copyhold lands. The form of an antient feoffment was singularly concise. There is a copy of one in the Appendix to the 2nd vol. of Blackstone's Commentaries, No. 1.

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it became the custom to have a written instrument called the charter or deed of feoffment [CHARTER], which declared the intention of the parties to the conveyance. But now, since the Statute of Frauds (29 Car. II. § 3), a written instrument is necessary. Still however the land passed by the letter, for if a deed of feoffment is made in writing, an estate at will only passes [ESTATES]; though if liberty is made, and the deed does not express that the land is conveyed to the feoffee and his heirs, an estate for life of the feoffee only will pass. No lease or tenancy can pass with a feoffment with liberty, the conveyance being in fact the investiture with the freethold.

Livery of seisin, of both the kinds previously mentioned, was at first performed in the presence of the freeholders of the nearest town, or the feudal lord; because any damage relating to the freethold was decided before them as pare curiam, "equals of the court," of the lord of the fee. But afterwards, upon the decay of the feudal system, the conveyance was made in the presence of any witnesses; and where a deed was used, the conveyance was attested by those who were present at it.

Livery in deed may be made by the feoffor or his attorney to the feoffee or his attorney. When lands lie in several counties, as many conveyances are necessary; and where lands are in several parishes, the tenant of each must be made surety for his tenant. But no liberty can be made but by the consent of the tenant in possession, and the consent of one will not bind the other. But liberty in will or vacant view can only be given and taken by the parties, and not in writing, unless it can be proved by evidence that they were previously agreed to.

Livery of this nature requires to be perfected by subsequent entry in the lifetime of the feoffor. Formerly, if the feoffor durst not enter for fear of his life or bodily harm, his claim, made solemnly before the court, and ascertained by publication, or his legal attorney, would preserve his right. The security of property consequent upon the progress of civilization having rendered this exception unnecessary, it was abolished by the recent Statute of Limitations, 5 & 4 Will. IV. c. 27 § 1. By this the legislature has introduced a more convenient mode of conveyance, feoffments have been rarely used in practice, and then rather for their supposed peculiar effects, as wrongful conveyances [CONVEYANCES], than as simple means of transferring estates. It has been usual to make corporations convey their own estates by feoffment, in consequence of the supposition that a corporate body cannot stand seised to a use, though it seems that this doctrine only applies to the case of lands being conveyed to a corporation for the use of itself (Gibson's Case, 11 Hold. 176; Gough, 101 Edin. 921). It is the subject of destruction or the discontinuance of an estate tail, or the acquirement of a fee for the purpose of levying a fine [FINE] or suffering a recovery [RECOVERY], a feudal utility usually plighted by the quitrents, or is in the ease attributed to this mode of conveyance by the earlier law writers, that where the feoffor was in possession, however unfounded his title might be, yet his feoffment passed a good; valuable, it is true, by the rightful owner in some cases, which he would have wholly of right, might become good even as against him. Being thus supposed to operate as a disseisin to the rightful owner, it was thought till recently that a person entitled to a term of years might by making a feoffment to a stranger pass a fee to him, and then by levying a fine acquire a title by non-claim. This doctrine led to very considerable discussion, and though strictly according to the principle of the old law, yet being alike repugnant to the principles of justice and to common sense, it has been overruled. In the progress of the law this doctrine was involved in overruled cases by the doctrine against its justice and expediency were used, rather than those founded upon the principles of law, and the bench even resorted to ridicule. Mr. Baron Graham in one of his observations, "yet is this paper and packthread to be called by the tremendous name of disseisin." The whole state of the question may be found in Mr. Knowler's celebrated argument in Taylor's case, Atkins v. Horde; 1 Burr. 60, Doe v. Maddock; 6 Lyne; 3 H. 1, Jeanet v. Wm. Preston; 17 & 18 Geo. I. 40 (4th ed.); 1 Prest. Com. 32 (2nd ed.); d 4 Bythew. Comp. (Jarman's ed. 117).

The owner of lands of gavelkind tenure [GAVELKIND] may convey them by feoffment at the age of 15; and therefore in such cases, which he has no lapsus of time, a feoffment is still resorted to. It is also frequently used for the sake of economy upon small purchases, in order to save the expense of a deed, which is necessary where the conveyance is by lease and fee.

FERÉ (Zoology), the third order of Mammalia, according to Linnaeus. The following is his character of the order: upper lip or foot (better) naked, mouth (acutirostris); canine teeth solitary. The order contains the following genera: 1. Phoca (the Seals); 2. Canis (the Dogs, Wolves, Foxes, Hymenas, and Jackalas); 3. Felis (the Cats); 4. Ursus (the Bears); 5. Mustela (the Otters, Glutton, Martens, Pole-cats, Ferrets, and Weasels, including the Ermine, &c.); 6. Ursus (Bears, Badgers, and Raumos); 7. Vulpes (the Foxes, Hares, and Wild Rabbits); 8. Viverrea (the Ichneumons, Coats, Skunk (Putorius), Civets, and Genets); 9. Musa (the Otter, Glutton, Martens, Pole-cats, Ferrets, and Weasels, including the Ermine, &c.); 10. Erinaceus (the Hedge hogs). Linnaeus places the Feré between the orders Bruta and Grilver.
however, moderate as he was, would not listen to these two
concessions, especially the latter, and the negotiations were
still pending with regard to the former, when the emperor
died at Vienna in July, 1564. He left three sons: 1. Maxim-
ilius, who succeeded him as emperor, archduke of Austria
and king of Bohemia and Hungary; 2. Ferdinand, whom
he made count of Tyrol; 3. Charles, whom he appointed
duke of Styria, Carinthia, and Carniola. Upon the whole,
the administration of Ferdinand was able and enlightened;
but his high-spirited energy, the quickness of his temper,
and unceasing zeal for useful reforms, and he saw the closing of the council of Tre-
(tex, History of the House of Austria; Dunham, History of the Germanic Empire.)

FERDINAND II. of Austria, son of Charles, duke of Silesia, and Maria of Spain, joined the Protestant party and became king of Bohemia and Hungary in 1619. But the states of Bohemia, who were already in open revolt against Matthias, both from political and religious grievances, refused to acknowledge Ferdinand, and declared the throne vacant. Count Thorn, who was at the head of the same insurgents, was joined by the dissidents of Moravia, Silesia, and Upper Austria, and Fer-
dinand found himself besieged within the walls of Vienna by the rebels, who threatened to put to death his minis-
ters, as they had done with the governor of Prague and his successors. The young archduke, however, steeled his
town-house, and confined Ferdinand himself in a monas-
ty, and educated his children in the Protestant faith. His
friends however found means to raise the siege, and Ferdi-
inand hastened to Germany to claim his imperial estates,
but was stopped by his mother, who was already dead.
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occupied Naples, where their conduct soon disgusted the Neapolitans, while the other states of Italy formed a league against them in the North. Ferdinand seized the opportunity to ask assistance from Ferdinand V. of Spain, who sent in his great Captain Gonzalez of Cordova with a body of troops, economic aid the next year the kingdom of Naples. Ferdinand returned in triumph to his capital, but did not long enjoy his prosperity; he died suddenly in 1496, at the age of 28 years, regretted by his subjects, who had formed great hopes of him from his amiable qualities and abilities. He was succeeded by his uncle Frederick, who was soon after treacherously deprived of his kingdom by his pretended ally, Ferdinand of Spain.

Ferdinand III of Naples is the same as Ferdinand V. of Spain.

Ferdinand IV. of Naples, afterwards styled Ferdinand I. of the United Kingdom of the Two Sicilies, born in January 1751, was the son of Don Carlos of Bourbon, king of the Two Sicilies, afterwards Charles III. of Spain. The life of Ferdinand is remarkable, not so much on account of his personal character, as from the uncommon length of his reign and its many vicissitudes being closely connected with all the great events of Europe during the last half century, as well as the singular good fortune which attended him to the end of his life with little or no exertion on his part. The cause of his elevation was greatly beyond his own. The age of more than eight years of age when his father Charles, being called to the throne of Spain by the death of his brother Ferdinand VI., made over to him the kingdom of Naples and Sicily, appointing a council of regency, at the head of which was his uncle, Duke Ferdinand of Bourbon, a man of mediating disposition who however does not seem to have been very anxious about the instruction of his young sovereign. In April 1768, Ferdinand, being now of age, married Maria Carolina of Austria, to whom he was attached, and whom he married, clever, and ambitious, who is fact ruled under her husband's name till her death, assisted by the various ministers who succeeded each other at the helm of affairs, the king himself being generally passive, and his time being much occupied with the management of his domains, and the diversions of the court. Ferdinand was by no means deficient in good sense or natural penetration; he often saw things more clearly than those around him, which is manifest from many of his shrewd though blunt remarks which are still remembered at Naples; but, want of instrument, of whom he was aware, and his dislike of application, prevented him from exerting or enforcing his own judgment. The first 30 years of his reign, those of the regency included, were for Naples years of peace and comparative happiness; many useful reforms were effected by his ministers, and the country continued at peace after the first part of the 17th century. A detailed account of these reforms, in the various departments of public education, ecclesiastical discipline, feudal jurisdictions, and the administration of justice, is given by Colletta, in his "Naples under Ferdinand I. the Second" volume of his "Memoires sur le Royaume de Naples," 1834, and also by Count Orloff in the 2nd volume of his "Memoires sur la Politique de Ferdinand I." 1796, was very popular, especially with the lower classes; and as he was the first king born at Naples for centuries past, they called him emphatically "our king."

Tanucci being dismissed in 1777 for having objected to the queen taking her seat in the council of state, Caracciolo and others followed for a short time, until John Aston, an Englishman, and a naval officer in the service of Leopold of Tuscany, was sent for to organize the Neapolitan navy and army, which had fallen into decline during a long season of peace. The advancement of Aston was extremely rapid; he was made general, then captain-general of the kingdom, and by the year 1787 had risen to the position of minister (for the other ministers were merely his creatures), and in this office he remained for many years. His administration was neither so economical nor so wise as that of Tanucci. Things went on more quietly and smoothly for several years, yet a considerable degree of liberty of speech, and even the press, prevailed at Naples, and the country was prosperous and the people contented until the breaking out of the French revolution, of which Naples, however remote, felt the shock. The queen being the sister of Marie Antoinette, and during the revolution was well informed of the treatment her relatives of France with at the hands of the revolutionists; and as many young men at Naples, mostly belonging to the higher ranks of society, seemed to approve of the principles of the revolution, the court took alarm, and the men who had always been averse to reform and improvement seized the opportunity to regain the ascendency. This was an epoch of a re-action in the internal politics of Naples. Arrests were made, and a guisa, or state tribunal, was formed to try the real or pretended conspirators, three of whom were sentenced to death, and several to perpetual imprisonment. But the ministry (of whom the judges, notwithstanding all the exertions of the attorney-general, Vanni, could find no evidence), were acquitted after four years' confinement.

The court of Naples had joined the first coalition against France in 1792, but before their troops to join the Austrians in the North of Italy, and others with a squadron to the expedition against Toulon. In 1796, however, alarmed by the successes of Bonaparte, a peace was concluded with the Directory by paying a few millions of francs. In 1798, Ferdinand had been long occupied in Naples. Ferdinand formed a secret alliance with Austria, England, and Russia, but, instead of waiting for the opening of the campaign in Lombardy, which was to take place in the following spring, the Neapolitan army, 60,000 strong, began to move in November, 1797, and marched upon Rome, which it occupied only for a few days, as the French generals, having collected their forces, attacked and routed several divisions of the Neapolitans, and cut off the communications between the fleet; a general panic ensued, and Ferdinand was forced to evacuate Rome, fled back to Naples; Mack, who was his commander-in-chief, followed his example; and of the various corps that were left to themselves without any concerted plan or preparations in case of a reverse, some were unhappy events, and many of them retired to their own foetions, whither the French followed them closely. The greatest confusion prevailed at the court of Naples; the queen, beset by informers, fancied that the capital was full of conspirators, and determined to accompany her husband to Sicily. Ferdinand was greatly induced to do the same, and the royal family left Naples on the 21st of December, 1798. The French meantime were approaching, and the populace, left without a government and excited by denunciations against the French, on the 29th of December, 1798, took the crown of the French. The Neapolitan king was recalled to Rome, and the last months of his reign had led him to the physic of falling asleep.

In the early years of 1799, the French occupied all southern Italy, and Ferdinand was forced to take refuge in Sicily, where he was received with great splendor by his people. The French, however, had not yet completed their conquest of Naples, and Ferdinand determined to attempt the recovery of his throne. He landed at Gaeta, and was received with acclamations by the Neapolitans. The French, however, were not disheartened, and Ferdinand was compelled to retreat to Sicily. The Neapolitans, however, were not satisfied with the restoration of the king, and Ferdinand was forced to take refuge in the Royal Palace at Naples. The French, however, were not disheartened, and Ferdinand determined to attempt the recovery of his throne. He landed at Gaeta, and was received with acclamations by the Neapolitans. The French, however, were not disheartened, and Ferdinand was compelled to retreat to Sicily. The Neapolitans, however, were not satisfied with the restoration of the king, and Ferdinand was forced to take refuge in the Royal Palace at Naples.
extravagant in its expenditure, the queen was as arbitrary as ever, and great jealousy existed between the Sicilians and Ferdinand. There had been a parliament consisting of three orders, barons, clergy, and deputies of the towns, and the parliament would not sanction the levying of fresh taxes. The queen then ordered the imprisonment of five of the most influential barons. Meantime it was suspected that that princess, who had consented a dislike to the English, whom she considered as a check upon her, entertained secret communications with Naples, who in 1810 had married her grand-niece, Marie Louise, and who was, by her property, now regent in Sicily, and was converted at Massina. All these circumstances obliged the English government to interfere, and in January, 1812, Ferdinand resigned his authority into the hands of his eldest son, Francis. A parliament was assembled, which abolished feudalism, and framed a new constitution upon a liberal basis. The queen’s influence was now at an end, and after some fruitless intrigues she embarked in 1813 for Constantinople, from whence she went to Vienna, where she died in the following year. For an account of these events in the ranks of the provincial militia, see Botta, and also St. De Sici et de son Rapport avec l’Angleterre à l’Epoque de la Constitution de 1812, Paris, 1827. In 1814 Ferdinand resumed the reins of government, and opened in person the Sicilian parliament of that year. In 1815, after the battle of Vitoria, Ferdinand was recalled to the throne of Naples, and in June of that year he returned to his old capital. In a well written proclamation to the Neapolitans he promised them peace, a code of laws, and a larger share of the past, in short, that he would be an steady administrator. And now that he lie for the first time acted by himself, he kept his word. The government of Ferdinand at Naples from 1815 till 1820 was mild, impartial, and orderly. This is attested by Colletta, a liberal writer, b. viii. sec. 50 of his History. But in Sicily, however, he dissuaded the parliament, he never convoked it afterwards. By a decree of December, 1816, he assumed the title of Ferdinand I., King of the United Kingdom of the Two Sicilies, declaring that Sicily and Naples formed no longer distinct states, but were both subject to the same system of government.

Meantime a secret society, called Carbonari, were spreading themselves fast through the kingdom, especially among the landed proprietors in the provinces, and consequently through the ranks of the provincial militia. The land-tax which was more than 20 per cent. on the rent, made this class of people dissatisfied and ready for change. The origin of this society or sect, for it was religious as well as political, is somewhat obscure; it seems to have come from France into Italy, and was engrossed by both the prince of Carinthia, who assumed it under the sanction; but was afterwards proscribed by him, and it then found favour with the court of Sicily. (Memos. of Secret Societies in the South of Italy, London, 1821. See also Botta, book xxxiv., and Colletta, his History. 4th ed. p. 91.) The Carbonari spread among the minor orders of society, who, rallying round the principle of civil equality, moved forward in a body pressing upon the higher orders; an impulse which in a virtuous and moral community tends to establish democratic institutions, but which in our own corrupt and profane state of society tends only to a change of matters under the forms and the language of democracy.

On the 2nd of July, 1820, a military revolt, led by two subalterns, took place in the 10th regiment of cavalry stationed near Naples; other troops joined in it, and the Carbonari of the capital and provinces openly exposed its cause, demanding a representative constitution for the kingdom. Ferdinand, prossed by his ministers, proceeded to establish a constitutional government. Carbonari were not wanting, and it was better to adopt one already made, namely, that of the Cortes of Spain, and thus the Spanish constitution was procured, and a parliament was convoked at Naples. Meantime the Sicilians, on their part, propped up a separate parliament for themselves and a repeal of the union of the two kingdoms, which the parliament at Naples refusing a revolt broke out at Palermo, which was put down after much bloodshed. Soon after, the Carbonari were engaged in the Trogole, wrote to King Ferdinand, inviting him to a conference at Laybach, in Carinthia, without which they stated that they could not acknowledge the new system of government established at Naples, Ferdinand, after some demur, obtained leave of the parliament to proceed to the congress in December, 1820, leaving his son Francesco I. at Naples. But in the spring of 1821, Ferdinand, by a letter written from Laybach, signified to his son that the allied sovereigns were determined not to acknowledge the actual constitutional government as established at Naples, desiring it incompatible with the peace of that country and the security of the neighbouring states; but that they wished Ferdinand himself, assisted by the wisest and most able among his subjects, to give to his kingdom institutions calculated to secure peace and harmony. So soon as the Austrian army passed the Po, moving on towards Naples. The parliament of Naples determined upon resistance, but at the first encounter, near Rieti, a Neapolitan division was defeated, and the rest of the army being alarmed at the thought of fighting against the will of their own king, disbanded, and the Austrians entered Naples without any further opposition at the end of March, 1821. Ferdinand soon afterwards returned to his capital on what may be styled his third restoration. The leading constitutionalists were allowed to emigrate; those of whom the Carbonari were tried and sent to the Presidio. The government again became absolute, but not so lenient or liberal as it was before 1820. After reigning four years longer, Ferdinand died suddenly on the morning of the 4th of January, 1825, aged seventy-six, and was lying been under sixty-five years. He was succeeded by his son, Francisco I.

Ferdinand or Fernando I., styled the Great, the son of Sancho, called Mayor, king of Navarre and Father in Asturias, succeeded to the throne, and killed Veron predomin, king of Leon. In 1038, succeeded him as king of Leon and of Asturias. Navarre became the appanage of Ferdinand’s brother Garcia. Ferdinand, called the Great, made war against the Moors, whom he drove away from the northern part of Portugal as far as the Mendo. He died in 1064, leaving three sons, Sancho, to whom he gave Castile; Alfonso, who had Leon; and Garcia, who retained Galicia.

Ferdinand II., second son of Alonso VIII. of Castile and Leon, succeeded his father in the latter kingdom only in 1157. He was engaged in wars with Alfonso Henrique, king of Portugal, and also with his own nephew, Alonso of Castile. He died in 1187.

Ferdinand III., called the Saint, son of Alonso IX., the king of Leon and of the Jimenarias of Castile, inherited both crowns after the death of his parents. Ferdinand was successful in his wars against the Moors beyond any of his predecessors; he took from them Badajoz and Merida in 1230, Cordova in 1236, and Jaen, Seville, and Carthage in 1248. He was made count of Barcelona which he afterward held till his death in 1249. Ferdinand collected the laws of his predecessors into a code; he established the council of Castile; he cleared his states from robbers, and broke the power of the great nobility, subdued the most illustrious sovereigns of the old Spanish monarchy. His son Alonso X., called ‘the Wise,’ succeeded him on the throne.

Ferdinand IV. succeeded his father, Sancho IV., in 1252, while yet a minor. His reign was engrossed chiefly by wars with the Moors; he died in 1312, and was succeeded by his son Alonso XI.

Fernando V. of Castile and II. of Aragon, son of John II. of Aragon, married in 1469 Isabella, daughter of Ferdinand II. of Aragon, to the crown, by whom he had several daughters, one of whom married Emmanuel, king of Portugal; another, Catherine, was married to Henry VIII. of England, and the other, Joanna, married Philip, archduke of Austria, son of the emperor Maximilian I. Ferdinand succeeded to the crowns of Aragon and of Castile by the death of his father, and his wife Isabella had already succeeded in her own right, and with the sanction of the Cortes to the throne of Castile by the death of her brother, Henry V. of Castile, in 1474, Ferdinand II. united the divisions of Spain united, though the two kingdoms remained under separate administrations. Castile was still governed in the name of the queen until the death of Isabella in 1504, followed by that of her son, when Ferdinand and rejoined the insanity of his daughter Joanna, assumed the government of Castile, which he retained till his death, when his grandson, Charles V., succeeded to the whole splendid inheritance.

Ferdinand took from the Moors the kingdom of Gran-
nada, their last possession in Spain, in 1492, after a war of several years; at the same time Columbus was discovering for him the largest of the known continents and his victory was one of his lesser conquests. Ferdinand's general, Gonzalo de Cordova, conquered for him the kingdom of Naples, partly by force, and partly by treachery. By similar means Ferdinand conquered Navarra, which he added to his other dominions, and in 1492, by marriage he became, in the persons of his children, heir presumptive to the crown of Castile and the richest of the Spanish kingdoms. He was also called the Prudent, and the Wise. He was ably assisted by his minister, Ximenes [Cisneros], who emancipated the crown from the power of the feudal nobles by raising troops at the expense of the state, and by following the privileges of the municipal towns. Ferdinand established the Inquisition in Spain, which fearful tribunal continued till 1826, when it was finally abolished. Acting from the same intolerant principle he drove away the Jews from Spain; but he also established a severe system of police control throughout his dominions by means of the association called the Santa Hermandad, which did summarily justice upon all offenders without distinction of rank. He also forbade any papal bull to be presented at the council without previous examination by the regent of the kingdom. He was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor.

FERDINAND VI., eldest son of Philip V. of Bourbon, known as Philip III. of Spain, succeeded his father as king in 1746, aged only 11 years. He made several useful reforms in the administration, and gave encouragement to commerce and manufactures. He had the character of a good and wise prince, willing to admit and to accept, whenever he thought it right, authority and justice. He was dissatisfied with the French, who had invaded Italy, and was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor. But he was also dissatisfied with the Inquisition, which he abolished. He was succeeded by his son, Ferdinand VI., who was a moderate monarch, but a wise and able one. He was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor. But he was also dissatisfied with the Inquisition, which he abolished. He was succeeded by his son, Ferdinand VI., who was a moderate monarch, but a wise and able one. He was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor. But he was also dissatisfied with the Inquisition, which he abolished. He was succeeded by his son, Ferdinand VI., who was a moderate monarch, but a wise and able one. He was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor. But he was also dissatisfied with the Inquisition, which he abolished. He was succeeded by his son, Ferdinand VI., who was a moderate monarch, but a wise and able one. He was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor. But he was also dissatisfied with the Inquisition, which he abolished. He was succeeded by his son, Ferdinand VI., who was a moderate monarch, but a wise and able one.
in the Isle of Leon, near Cadiz, under colonels Quiroga and Rea, proclaimed the constitution of 1812; the example was followed by other garrisons; the Ministers at Madrid hesitated, and Ferdinand, on the 9th of March of that year, gave his adherence to the constitution. The Cortes were assembled, and the deputies and other liberals, who had been suppressed in Spain, were enabled to take part in the new stage. The events of the following three years are matters of contemporary history, upon which it is difficult as yet to pronounce a final judgment. Errors were committed by all parties. At one time Ferdinand reconstituted a constitutional system, but now and then fresh acts of violence or of violation of the more zealous liberals came to raise his old fears and antipathies; whilst, on the other side, the partisans of absolutism, who still lingered near the king's person, kept up their intrigues and mistrust even in the constitutional system. Of Ferdinand's reign there is a pretty accurate sketch in a work written by a Spanish emigrant at Paris, styled Revolución Espagnole, Examen Crítico, 8vo., 1839.

At the beginning of 1833, Louis XVIII. declared to the French chambers that he was going to send his nephew, the duke of Angoulême, with an army of 100,000 Frenchmen into Spain to deliver Ferdinand VII. from the slavery in which he was kept by a factious party, and to restore him to the throne of Spain. Zavala, the minister of Ferdinand, made a futile resistance against this interference, and the Cortes of Spain, on their side, rejected the mediation of the northern courts, who, to prevent the entrance of the French, required certain modifications in the constitution of 1812. The Cortes, on the 19th June, declared Ferdinand incapable of acting, and requested the king to follow them. On the 7th April the French entered Spain, with little or no opposition, and on the 23rd they entered Madrid, where they were received with acclamations by the clergy and the lower classes, while the ceded two another and the old adverse military address to the duke of Angoulême. The Cortes, not judging themselves safe at Seville, removed to Cadiz, and, as Ferdinand refused to quit Seville, they passed a resolution, after a stormy debate on the 16th June, declaring the king in a state of incapacity, and gave him over to the Cortes. Ferdinand was then compelled to set off with his family on the evening of the 12th, under a strong escort, for Cadiz, where he arrived on the 19th. In the following September the French besieged Cadiz, and after some negotiations Ferdinand was allowed by the Cortes to repair to the French camp to treat with the Duke of Angoulême. Before leaving Cadiz Ferdinand published a proclamation on the 30th September, in which he promised a general amnesty for the past; he acknowledged all the debts and obligations contracted by the state in the last thirty years and the proceeds of the French occupation. The Cortes, in answer to this promise, were kept. The liberals were persecuted worse than before, the debts contracted under the Cortes were disallowed, and the old system of absolutism with all its mal-administrations was resumed. The sequel is well known. Ferdinand continued to govern, not nominally, checked by one side by fear of the liberals, and on the other by mistrust of the more violent absolutists, or apostolical party as it was called, who found Ferdinand too moderate for them, and who would have re-established the Inquisition, and ruled Spain as the old Spaniards were governed. None of this was done. Ferdinand was to take little or no interest in public affairs, leaving things to go on as they could. Having lost his third wife, who was a Savoy princess, and having yet no children, he married, in November, 1819, Maria Christina, daughter of Francis, king of the Two Sicilies, and his own niece by his mother's side. By her he had two daughters—Maria Isabella, now queen of Spain, born 10th October, 1830, and Maria Louisa Ferdinand, born 1832. Ferdinand died on the 29th September, 1833, after being long in a bad state of health, at the age of sixty-five. His remains are in the royal vault under the chapel of the Esteruel.

Accounts more or less accurate of the various periods of his reign may be gathered from the numerous contemporaneous pamphlets and books, which have been written. The following works—Memoirs de Ferdinand VII. king of Spain, translated from the Spanish original MS. by M. J. Quinn, London, 1824; Torreño, Historia del Llenamento, P. C., No. 624—will be found useful.

miento, Guerra y Revolución de España: Ingles in Spain in 1830, and a very interesting article on Spanish affairs in No. 1 of Cochrane's Foreign Quarterly Review, March, 1833, from which something like a correct estimate of Ferdinand's character may be formed.

FERDUSE [Frenz]

Ferdusin Ysmael, born in 1710, at a short distance from Keith, a village in Banffshire. His father, who was a day-labourer, taught him to read and write, and sent him to school for three months at Keith.

When only seven or eight years old, having seen his father use a horse in harness, he was put to work in order to raise the roof of their cottage, which had partly fallen in, his curiosity was so much excited by the case with which what appeared to him so stupendous an effect was accomplished, that he thought about it, and made trials, and constructed models, and drew diagrams, till he became acquainted with the chief properties of the lever, not only in its simple application, but as modified by the wheel and axle. The taste for practical mechanics thus formed continued to distinguish him through life, and, together with an equally decided taste for astronomy, fitted him in later years to distinction and independence.

His astronomical pursuits commenced soon afterwards. His father sent him to a neighbouring farmer, who employed him in watching his sheep. While thus occupied, he amused himself at home in making models of hours, chains, wheels, and similar things. When a little older, he entered into the service of another farmer, who treated him with great kindness, and encouraged and assisted him in his astronomical studies. 'I used,' he says, 'to stretch a thread with small beads on it at arm's length between my eye and the stars, sliding the beads upon it till they hid such and such stars from my eye, in order to take their apparent distances from one another, and then laying the thread down on a paper, I marked the stars thereon by the beads.' 'My master,' he adds, 'that I might make fair copies in the day-time of what I had done in the night, often worked for me himself.'

Mr. Gilehriz, the minister of Keith, having seen his drawings of the earth and heavens furnished him with compasses, ruler, pen, ink, and paper.

At the house of Mr. Gilehriz he met Mr. Grant of Achoyanay, with whom, at the termination of his engagement with his present master, he went to reside, being then in his twentieth year. He had learnt much from books, and Mr. Grant's butler, Mr. Cantley, taught him decimal arithmetic and the elements of algebra, and was about to commence instructing him in geometry when he left the employment of that gentleman.

Towards the end of 1832, Ferguson was entered into the service of a miller in the neighbourhood, where he was overworked, and scarcely supplied with food enough for subsistence. After remaining a year in this situation, he was engaged by Dr. Young, who was a farmer as well as a physician, and who promised to take care of him. His promise was kept, and treated him with so much kindness and warmth, that, though his engagement was for half a year, he left at the end of three months and forfeited the wages which were due to him. A severe hurt of the arm and hand, which he had got in his master's service, confined him to his home for two months after his return home. During this time he amused himself with constructing a wooden clock. He afterwards made a wooden watch with a whirligig spring; and his talents having been turned in this direction, he began to collect a little money in the neighbouring villages and towns, on making clocks and watches.

He was about this time invited to reside with Sir James Dunbar of Durn, and, at the suggestion of Lady Dipple, Sir James's sister, began to draw patterns for ladies' dresses. He says, 'I was always interested in the arts, and began to think myself growing rich by the money I got by such drawings; out of which I had the pleasure of occasionally supplying the wants of my poor father.' His studies in astronomy however were not neglected, and he still continued to use his telescopes.

Besides drawing patterns, he copied pictures and prints with pen and ink; and having left the residence of Sir James Dunbar for that of Mr. Baird of Auchmeddan, Lady Dipple's son-in-law, he drew a portrait of that gentleman, which was admired and copied by other villagers. or likeesses from the life in Indian ink; these appeared to his patrons to be so excellent, that they offered to lend him to Edinburgh with the intention of having him regularly...
instructed in drawing, but a premium having been unexpectedly demanded, he boldly commenced the practice of his art at once. The Marchioness of Douglas having assisted him with her patronage, he succeeded so well, that he obtained money enough not only to defray his own expenses, but to contribute largely to the support of his aged parents.

The next step on for a while was not most twenty-six years, he seems never to have given his mind to it; and indeed, after having been two years in Edinburgh, he returned to the country with a supply of drugs with the intention of practising medicine, but soon found himself to be totally unqualified for such a profession. He then went to Inverness, where he remained about three months. While there he drew an Astronomical Rotula, for exhibiting the eclipses of the sun and moon, which he transmitted to Professor Macaulay in Edinburgh, who was highly pleased with it, and had the Rotula engraved, and it ran through several impressions, till, by the change of the style in 1753, it became useless. While at Edinburgh he made a wooden orrery, and delivered a lecture on it before the mathematical class.

In 1748, he resolved to go to London, where he continued his profession of drawing portraits, but devoted his leisure to astronomical pursuits.

In 1747 he published his first work, "A Dissertation on the Phenomena of the Harvest Moon," having been previously one of the sitting of the Royal Society by Mr. Folkes the president. In 1748 he read lectures on the eclipse of the sun which happened in that year. From this period he began, under the patronage of the prince of Wales, afterwards George III., to combine his astronomical: he was much more numerous and by no means richly attended, and he now relinquished his former profession altogether. From this time to the end of his life he continued his lectures, and wrote several papers on astronomy and mechanics.

The succession of George II. in 1760, gave him a pension of 501. a year which was granted him out of the privy purse. In 1763 he was elected a Fellow of the Royal Society, and in 1770 was chosen a member of the American Philosophical Society. He died in 1776, aged 66, leaving an only son, to whom he left a considerable sum acquired by his lectures and his writings.

Ferguson has contributed more than perhaps any other man in this country to the extension of physical science among all classes of society, but especially among that largest class whose circumstances preclude them from a regular course of scientific instruction. Perspicuity in the selection and arrangement of his facts and in the display of the truths deduced from them was his characteristic both as a lecturer and a writer.

His principal works: "Astronomy explained upon Sir Isaac Newton's Principles, and made easy to those who have not studied Mathematics," 4to. 1756. "Lectures on Subjects in Mechanics, Hydrostatics, Pneumatics, and Optics, with the Use of the Globes, the Art of Dialling, and the Calculation of the Mean Times of New and Full Moons and Eclipses," 8vo. 1750; 4to. 1764. An edition of this work by Dr. Brewster, 4to. 1781. "Easy Introduction to Astronomy for Young Gentlemen and Ladies," 1769. "Introduction to Electricity," 8vo. 1770. "The Art of Drawing in Perspective made easy to those who have no previous knowledge of Mathematics," 8vo. 1775; this is his best work. Besides other contributions here, he contributed several papers to the Philosophical Transactions.

"Life by himself, prefixed to his 'Select Mechanical Exercises'; Nicholas's "Anecdotes of Agriculture"; and "A Library of Edinburgh." FERGUSON, ADAM, born in 1724, was the son of a parish minister in Perthshire. He studied at St. Andrews and at Edinburgh. On being ordained, he was appointed chaplain to the 42nd, a Highland regiment, in which he remained, and he was appointed keeper of the advocates' library of Edinburgh. In 1759 he was made professor of natural philosophy in the college of that city, and in 1764 he was appointed to the chair of moral philosophy, a branch of science to which he had particularly applied himself. In 1767 he published his 'Essay on the History of Civil Society,' a work which was well received, and which procured him the notice of public men. It was reprinted several times, and translated into French, German, and other languages. In 1774 he accompanied the young Earl of Chesterfield on his travels, but remained with him only a twelvemonth. In 1776 he wrote 'Remarks on a Paper for the Improvement of the National Education,' and 'Remarks on a Paper for the Improvement of the National Education.' In 1778 he was appointed secretary to the commissioners who were sent to America in order to try to effect a reconciliation with the mother country, an office in which Ferguson took a clearer view of the state of the question and of the temper of the American people than was done by his English colleagues. On his return in 1779 he resumed the duties of his professorship, and in 1783 he published his 'History of the Progress and the Termination of the Roman Republic,' 3 vols. 4to. This work, which has been reprinted several times, and has been translated into several languages, is one of the finest and most complete of the works of the Frenchmen, not so much a regular narrative of the events of Roman history, as a commentary on that history; its object is to elucidate the progress and changes of the internal policy of the Roman commonwealth, the successive conditions of its social state, as well as the progress of the military system of the Romans, and the varied but studied course of their external policy towards foreign nations. He carries his work down to the end of the reign of Tibullus, when all remains of the old institutions may be said to have become effaced. Ferguson's work has, therefore, been acknowledged, after the publication of Gibbon's on the decline and fall of the empire, Ferguson and his contemporaries, the French Abbe Auger, were foremost among those who, previous to Nieuhoff, investigated the internal working of the institutions of the Roman republic, and the public of historical institutions, the professorship on account of ill health, and was succeeded by Dugald Stewart. In 1792 he published 'Principles of Moral and Political Science, being chiefly a retrospect of the lectures on ethics and politics, delivered in the College of William and Mary, Williamsburg, Virginia,' 4to. 1793; a comprehensive review of the various systems of ethics antient and modern, especially with respect to moral approbation, public security, and individual happiness. Another work of Dr. Ferguson's on the same subject, though a work not so popular as the former one, is his 'Ethics,' which he first published in 1769, has been often reprinted and translated into foreign languages, and has also been adopted as a text-book in some foreign universities. Ferguson died at St. Andrews in February, 1816, being above 30 years of age. He had been on terms of friendship with Hume, Robertson, Adam Smith, Dugald Stewart, Playfair, and other distinguished contemporaries. His mind was independent, and his frankness and honest adherence to his opinions are said to have stood in the way of his advancement.

FERGUSON, or FERGUSON, ROBERT, was born at Edinburgh about the year 1750, and educated at the University of St. Andrews's, where he received some encouragement from one of the professors named Wilkie, who employed him to transcribe his lectures. An anonymous biographer prefixed to Ferguson's Poems, edition of 1807) has employed considerable research in discovering certain freaks of a kind neither ludicrous nor in good taste, in which he appears to have indulged during his residence at St. Andrews's; there is a passage in Central and Central, in 1866. During the sentence was recalled, and he remained as it appears for four years, during which time he subsisted on a bursary or exhibition founded by a person of his own name. On leaving St. Andrew's, he paid a visit to an uncle from whom he was lent a small sum of money. He then left his house under circumstances of which his anonymous biographer gives a very unsatisfactory account. During the remainder of his life he was employed in the office of the comissary-clerk of Edinburgh, with the exception of a few years, when he was employed by the深知 the Word. Ferguson was a constant contributor to Rudderman's 'Weekly Monitor,' from which his poems were afterwards collected. The local celebrity which these productions obtained for him gave him so frequent opportunities of convivial and other excess as to have his health undermined. He died at the age of twenty-four years. His last days were passed in a mad-house, his dehanchery having ended in repentance which took the form of melancholy, and ultimately that of insanity. Ferguson's poems are written partly in English and partly in Lowland Scotch. Those in Lowland Scotch have been admired by persons conversant with the idiom in which they
are written; but to an English ear they want the charm which makes Burns not the less sweet because he is sometimes not intelligible. There is a coarseness and clumsiness about Ferguson's, which render it wonderful how their author could have ever succeeded in gaining a reputation as a poet. In praise of his English verses, a little more may be said; but we suspect that the similarity of his life to that of Chatterton created an interest about him to which, if not all of his celebrity is owing.

His life has been written by Irving (Glasgow, 1799; reprinted in 1865), and by an anonymous author who dedicates his sketch to James Graham, esq. This latter production contains more specimens of bombast and bad taste than are usually found in the space of eighty pages, and serves by its tone of puerility to reproduce exactly those prejudices which it was intended to repress.

(Chalmers's Biogr. Dict. and Biographie Universelle, vol. xiv.)

FERGUSONITE, a crystallized mineral, is principally a columbiate of yttria. It has been found only in Greenland, near Cape Farewell, imbedded in quartz.

Primary form a square prism. Colour brownish-black. Opaque, except in the splinters. Lustre slightly metallic. Specific gravity 5.838. Hardness 95,60. Streak pale brown. fracture conchoidal. Before the blow-pipe becomes of a greenish-yellow, and does not fuse, but with a phosphate it dissolves completely. According to Hartwell, this mineral consists of:

- Oxide of columbium .................. 47.75
- Zirconia ............................ 49.12
- Oxide of curium .................... 4.68
- tin ................................ 1.00
- iron ................................ 0.95

99.65

FERISHA (Mohammed Kasim), a celebrated Persian historian, was born at Astrabad, on the border of the Caspian Seas, in A.D. 1570. His father, whose name was Cheikh Agha Hindeh, and who appeared to be a learned man, left his native country when Ferisha was very young and travelled into India. He finally settled at Ahmadnugger, in the Deccan, during the reign of Mumtaza Miran Shah, and was appointed to instruct Miran Hossein, the son of Mumtaza, in the Persian language, but he died soon after this appointment. Miran Hossein however patronized his son Ferisha, and through his influence the historian was advanced to high honours in the court. When Mumtaza was assassinated, Ferisha, who was then only seventeen years of age, was appointed to succeed his father.

In the troubles following the death of Mumtaza, Ferisha left Ahmadnugger, A.D. 1589 (see the preface to his history), and went to Bejapore, where he was kindly received by the regent and minister, Dilawur Khan, who introduced him to Ibrahim, and on the death of the reigning monarch in this court he spent the remainder of his life in high honour, engaged sometimes in military expeditions, as we learn from his own history, and devoting his leisure time to the composition of his great work. He died, in all probability, soon after A.D. 1611, at the age of forty-one. He makes mention in his history of the English and Portuguese factories at Surat, A.D. 1611.

The preceding account has been chiefly taken from the English translation of Ferisha, by Colonel Briggs, which was published in 1820. The bulk of the history had been previously translated. Colonel Dow published a translation of the first two books in his 'History of Hindostan,' 2 vols. 4to. London, 1768, which is not considered to be very accurately done. A much better translation of the third book was written by Mr. Johnson Scott in his 'History of the Deccan,' 2 vols. 4to. 1794. Mr. Stewart, in his 'Descriptive Catalogue of the Library of the late Tippo Sultan of Mysore,' gives an account of the contents of the history, p. 12; and also a translation of part of the tenth book, accompanied with the original Persian, F. 259—267.

The history of Ferisha is divided into twelve books, with an introduction, which gives a brief and imperfect account of Hindoo history before the time of the Mohammedans, and also a account of the conquests of the Arabs in their progress from Arabia to Hindostan. The first book contains an account of the kings of Ghisai and Lahore, A.D. 977—1186. Here the detailed portion of his history begins. 2nd, The kings of Delhi, A.D. 1206 to the death of Akber, 1605; 3rd, The kings of the Deccan, A.D. 1347—1536; 4th, The kings of Guzerat; 5th, The kings of Malwa; 6th, The kings of Kandiaish; 7th, The kings of Bengal; 8th, The kings of Multan; 9th, The rulers of Sind; 10th, The kings of Cashmir; 11th, An Account of Malabar; 12th, An Account of the European Settlers in Hindostan. At the conclusion of the work, Ferisha gives a short account of the geography, climate, and other physical circumstances of Hindostan.

Ferisha is certainly one of the most trustworthy of oriental historians. He seems to have taken great pains in consulting authorities. At the close of his preface he gives a list of thirty-five historians to whom he refers, and Colonel Briggs mentions that the chief controversy about the Kalima (the name quoted in the course of the work) 'What is really remarkable in this writer,' says Colonel Dow, 'is, that he seems as much divested of religious prejudices as he is of political flattery or fear. He never passes a good action without conferring upon it its due reward of praise, nor a bad one without stigmatizing it with infamy.'

FERMANAGH, an inland county of the province of Ulster, in Ireland; bounded on the north-west, north, and north-east by the counties of Donegal and Tyrone; on the east by the county of Monaghan, and on the south and south-west by the counties of Cavan and Leitrim. The greatest length from the boundary of Donegal to Ballyshannon on the north-west, to Shankill Loch, on the borders of Monaghan, on the south-east, is 45 statute miles; the breadth, from Culcagh mountain, at the point of the same county, to the south-south-west, to Tappaghan mountain, on the borders of Tyrone, on the north-north-east, is 29 statute miles. The area, according to the Ordnance Survey map, consists of:

- Land .................................. 409,783 1 12
- Water .................................. 45,748 1 2

Total 456,531 2 14

Of this extent of water 36,348 acres and 51 perches are included in the upper and lower lakes of Loch Erne, which lie almost wholly within this county. [ENNS, Lough.] The gross population of Fermanagh in 1831 was 149,763.

Fermanagh is divided into two nearly equal portions by the line of Loch Erne, which passes through the county to the south. The portion lying south of the upper or western sheet of Loch Erne contains a large tract of waste and mountain, of the same character with the extensive highland districts of Leitrim and Cavan, on which it borders. This tract is bounded on the north and west by the county of Upper and Lower Loch Macmacon; the waters of the first of which flow westward to the Atlantic, and of the two latter, eastward by the Arney river into Upper Loch Erne. The chief elevations of this tract on the north are, beginning from the west, the hills of Leannan, 239 feet; Ballygallon, 250 feet; Bolusty, 1646 feet; Shean North, 1175 feet; Shean East, 1030 feet; and Blackalee, 1026 feet; which overhang the shore of Upper Loch Erne in a continuous range. More central are Drenmad, 1009 feet; Knockmore, 919 feet; Glenkeel, 1233 feet; and Drumbad, 1312 feet; and on the south Slapaghan, 846 feet; Ora More, 954 feet; and Aghamore, 1249 feet. The whole of this district abounds with small lakes, and is traversed by numerous ridges running generally in a direction from east to west. It is particularly remarkable for the large number of the small lakes; the broken surface of the land, studded with these lakes of different sizes; the flatness of the surface; the rise of the country from the lakes; and almost every hillock rising to between 100 and 200 feet. The chief central parts caves and deep holes in the rock are of very frequent occurrence. On the east this rough tract slopes down to a well-cultivated district extending from Enniskillen along the neck of Loch Erne and up the valley of the Sliens and the Lougha rivers. South of the latter river rises the moor of Culishta to a height of 2188 feet, being the highest ground in the county. This neighbourhood is distinguished by the same characteristics—holes in the rock, caverns, and...
natural archees—which mark the more extensive mountain district. Three streams, descending from Cullagh, sink into different cavities of the rock, and after flowing nearly a mile each underground, emerge in a single river, called Cullagh, a feeder of the Arney. At the foot of Cullagh is situated Florence Court, a noble seat of the earl of Enniskillen; and generally throughout the tract from Loch Macnean to Enniskillen, and thence along the left bank of the lake, the seats of resident proprietors are numerous and highly respectable. The remainder of that part of the county which lies south of Loch Erne is low, and cultivated.

The district to the north of the Upper Lake is not diverse in many circumstances; the chief are Glenaveen, a foot and Tappaghnean, 1,110 feet. Towards Enniskillen there are numerous and well-improved seats of proprietors; and close to the town is Castle Coole, the residence of the earl of Belmore, which is generally considered the most splendid in residence in the modern style in Ireland. Tossit mountain, 909 feet in height, rises north-east of Enniskillen, and from its situation in a comparatively flat district, commands a very extensive and picturesque prospect. From Enniskillen to Upper Loch Erne the winding river is occupied on each side by demesnes and other improved lands; the upper lake, containing an immense number of wooded islands, is highly beautiful; the demesnes of Bellale and Crun Castle terminate it at each extremity. The remainder of the county north of the upper lake is chiefly arable and of great agricultural produce. The only towns of any consequence in the county besides Enniskillen and Irvinestown lie in this district, viz. Newtown Butler, Lisnaskea, Maguire's Bridge, Lisbellaw, and Tempo.

The lakes of Fermanagh are small. From the mountainous district on the south-west, the Slesny and Arney run into Loch Erne; the Cloghnan or Swinlamer river flowing south-east of Cullagh has a like termination. The Woodford, which separates Fermanagh from a part of Cavan, is the largest river which discharges itself into Loch Erne within the bounds of this county. The Drumany or Colebrook river, one branch of which passes by Tempo, is the only considerable stream that flows into the lake from the north.

The climate is somewhat cold and moist; violent winds are common in winter, and render the navigation of the lake dangerous.

<table>
<thead>
<tr>
<th>Wheat</th>
<th>Oats</th>
<th>Barley</th>
<th>Oilseed</th>
<th>Horn.</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 Tons</td>
<td>400 Tons</td>
<td>184 Tons</td>
<td>100 Tons</td>
<td>75 Tons</td>
</tr>
<tr>
<td>Market increase:</td>
<td></td>
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Fermanagh was first erected into a county by statute of the 11th of Elizabeth; but it was not till the time of the plantation of Ulster that it was finally brought under civil government. Having fallen to the crown by the attainer of Maguire, it was divided in like manner with the other five Plantation counties among Scott and English under-takers and native Irish. The precint or baronies of Knockinny and Magbenabo were allotted to Scottish under-takers; those of Clancy, Magherastephana, and Lurg, to English under-takers; and those of Clancawley, Coole, and Tyrone, to servitors and natives. The chief proprietors under the new settlement were the families of Cole, Benseraset, Butler, Humo, and Dunbar. The subsequent forfeitures of 1641 affected a large portion of Fermanagh, and considerably increased the possessions of those from whom many of the present proprietors are descended. The forfeitures consequent on the war of the Revolution affected only 1945 acres in this county, valued at 389/- per annum. (ENNISKILLEN)

Fermanagh returns three members to the Imperial Parliament, viz., two for the county, and one for Enniskillen, the assize town, which is the only borough or corporate town in the county. The public expenses of the county are defrayed by grand jury presents: the amount so levied in the year 1829 was 18,532l. 14s. 3d. The constabulary force employed in Fermanagh in the year 1833-4, consisted of 5 chief constables, 21 constables, 86 sub-constables, and 4 horses; the cost of which establishment was 4734l. 3s. 5d.

There has not been any statistical survey of Fermanagh published.

(Ordinance-Survey Map of Fermanagh; Harris's Liber misc. In Ulster. (1834.)

FERMAT, PIERRE DE, was born at Toulouse in 1555, and was brought up to the profession of the law. We have but few incidents of his private life, except that he became a counsellor of the parliament of his native town, was universally respected for his talents, and lived to the age of seventy years. His works were published in 1670 and 1679, in folio: the last volume contains his correspondence, besides some original scientific papers.

Fermat restored two books of Apollonius, and published...
Diophantus, with a commentary. The whole of the actual works of Fermat fill an exceedingly small space; nevertheless they contain the germs of analytical principles which have since come to maturity. In fact they may be regarded as the beginning of a systematic treatment of the results to which he had arrived, without demonstrations, or any indications of the processes employed.

The properties of numbers were the subject of his enthusiastic researches, and no single individual has added more that is both curious and useful to this branch of mathematics than Fermat: the theorem now commonly called Fermat's is but a particular case of a much more general one given in his works.

His method for finding Maxima and Minima has only the merit of a moderate ingenuity. He bore the differential calculus was discovered; the analysts of that day hovered on the brink of that beautiful process of analysis which has been rather ridiculously termed the greatest discovery of the human mind. A method not very remote from Fermat's was practised by other analysts of his day; and in spirit also by the antient geometers: but it certainly is not the differential calculus, and Laplace has no ground for his attempt to snatch from the claims of the English and German nations this grand step of analysis in order to appropriate it to his own.

In Fermat's correspondence with Father Mersenne, we find him, in a bungling manner, contesting with Roberval the first principles of mechanics, and maintaining that the weight of bodies is least at the surface of the earth, increasing both within and without, which is the direct opposite of the conception of Descartes. In his letters, when greeted by Mersenne with the retraction of his errors, he very disingenuously attempts to deny them, asserting that no body has a centre of gravity, with many similar trifles, which place in bold relief the immortal discovery of Sir Isaac Newton more than fifty years before he was born. This behaviour was not unknown to his immediate contemporaries, and is described by his successor, and his successor's successor, to his predecessor Galileo, who escaped from similar paradoxes, from which common sense ought to have guarded both Fermat and Descartes.

The correspondence of Fermat is sufficiently replenished with curious and amusing letters, written by some of his countrymen and countrywomen, who hated his propositions as the finest things which had ever been discovered. But it is justly suspected that the discovery of many of his properties of numbers was effected by a tentative process, he himself possessing no demonstration, as no vestige remains in the works published by his son of any peculiar analysis for arriving at them; while there are abundant proofs that he and Father Mersenne, a young Parisian, employed the methods of tabulation and trial, to suggest properties, and by further trials, utilise the results. Hence, though the doctrine of the calculus is much more barren than the theory of numbers this talent and industry would have produced more useful results; for what are the theorems of Fermat to the laws of Kepler?

Fermat conjectured that the path of light, in passing from one medium to another, is such as to describe the shortest possible course. This is a particular case of the principle of least action, and requires some remark. First, we see that Fermat's method for finding maxima and minima was not the differential calculus, for though imported from foreign countries to try this principle he was deterred, as he says himself, for two or three years, by the dread of the asymmetries of the process, though any tyro acquainted with the first principles of the differential calculus, with the proper data given, would now do the same for a penny. But if this should be explained in a geometrical manner. Secondly, during the life of Descartes, he seems to have disbelieved this law of refraction. The foundations of both their reasonings in natural philosophy were of the slenderest description, if indeed we can at all use such a term as reasoning to the methods of Descartes, whose followers had the greatest faith when he employed the least of that useful faculty. But the law is truly attributable to Snellius, and, though this is well known, many French writers still generally talk of the Cartesian law as the relevant first. Thirdly, Fermat did not attribute the truth of the principle to any mechanical laws, of which he seems to have known nothing, but to the pseudo-physical principle that nature should take the shortest course in performing operations: for he supposed, instead of the several cases of objection, to which he has given good answers, considering the position in which such an hypothesis placed him.

To give a more exact idea of the man, we shall give one of his problems, entitled 'Problem by P. de Fermat. To Wallis, or any other mathematician that England may contain, I propose this problem to be resolved by them. 'To find a cube number which, added to its aliquot parts, will give a square number.'

If Wallis and no English mathematician can solve this, nor any analyst of Belgium or Celtic Gaul, then an analyst of Narbonne will solve it.'

Wallis gives an account of this in the Commercium Epistolicum, the correspondence having been conducted through Sir Kenelm Digby. The works of Fermat contain also the tangents to some known curves, and some centres of gravity.

Though thus strongly endowed with the faculty of self-esteem, and of that cunning which seeks to hide the tracks of the great man, we must yet place Fermat among such men as Pascal, Barrow, Brouncker, Wallis; but he had none of the masculine mind of Descartes, nor a particle of the penetrating spirit of the glory of his age and nation, Newton.

It would be wrong to omit here the most curious of the theorems of Fermat relative to numbers. To make it more generally intelligible we may state, that a triangular number means the sum of any number of terms from the first of the natural numbers 1, 2, 3, 4, &c.; thus 1, 3, 5, 10, &c., are triangular numbers; the square numbers are 1, 4, 9, 16, &c., and are the sums of the progression 1, 2, 3, 4, &c.; pentagonal numbers in like manner are the sums of the numbers 1, 4, 7, 10, &c., viz., 1, 5, 12, 22, &c. The theorem consists in this, that every number is the sum of 1, 2, or 3 triangular numbers; every number is the sum of 1, 2, 4, or 8 square numbers, &c., &c., and so on; and in fact the subject of number theory, that of Minima and Maxima, the subject of the calculus, is contained in the paretificative, of which the products are very variable, and usually feudal.

When the expressed juice of grapes is exposed in warm weather to the air, which is necessary to the operation, it soon becomes turbid, its temperature rises a few degrees a motion occurs in the fluid, and minute bubbles of air form and break. As the process goes on, a thick froth, consisting of these bubbles and viscous matter, rises to the surface; and when these bubbles have burst, a viscous substance falls to the bottom of the vessel. This process is called fermentation by the chemists, the only agent in the process is yeast, and it is called also vinous fermentation, vinous fermentation, or fermentation of the grape.

FERMENTATION denotes the spontaneous changes which occur in certain vegetable and animal matters, and by which they are produced new fluid and gaseous compounds. Fermentation is of three kinds: the vinous, producing alcohol; the vinous, producing acetic acid; and the vinous, producing carbonic acid, the products of which are: the wine, the vinegar, and the soda water, the latter being the most important, and is called also carbonic acid, or soda water. The fermentation of the grape by the yeast is called yeast. On fermentation. In order to observe what happens during this vinous fermentation, take four ounces of sugar in four times its weight of water, and add the solution to a small quantity of fresh yeast, obtained as above described or from the fermentation of beer. Expose this mixture in a flask with a bent tube and a bottle for receiving the gaseous products, to a temperature of about 72°; it will be found that the substances will so act upon each other as to produce carbonic acid, which will be found in the gas-bottle, while the sugar will gradually disappear, and the flask will contain a mixture of water and spirit, or alcohol; this is separated by distillation. These changes occur without the interference of the air or its oxygen; nor does it appear that water is decomposed, or that anything is added by the yeast; it seems therefore that when sugar is deprived of oxygen and carbon, in the form of carbonic acid, it yields alcohol. Now alcohol consists of 3 equivalents of hydrogen, 3, 2 equivalents of carbon = 12, and 1 equivalent of oxygen = 8; its equivalent is therefore 23. In order then that alcohol and carbonic acid alone should be produced from sugar, this last must consist of 3 equivalents of carbon = 18, and 3 equivalents of oxygen = 24, giving 42 as its equivalent. On this admission, the production of alcohol by the separation of carbonic acid from sugar may be thus shown—

<table>
<thead>
<tr>
<th>Hydrogen</th>
<th>Carbon</th>
<th>Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 equivalents</td>
<td>3 equivalents</td>
<td>3 equivalents</td>
</tr>
<tr>
<td>Alcohol</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Sugar | 3 | 3 | 3 equivalents |
Carbonic acid | 0 | 1 | 2 equivalents |
Alcohol | 3 | 2 | 1 equivalent |
This would however show that sugar contains a larger quantity of carbon than is usually assigned to it. According to Gay Lussac, 100 parts of sugar should yield 48.76 of carbonic acid and 51.34 of alcohol, which is very nearly in accordance with the above theoretic statement.

Although sugar appears to be the only vegetable matter which yields alcohol by its decomposition, yet it is to be observed that pure sugar suffers no fermentation. In the juice of the grape, as well as in some other cases, there is some accompanying matter which acts as a ferment; and when yeast is thus spontaneously produced it causes fermentation in sugar, without, as far as appears, adding anything important; indeed it is stated that scarcely two per cent. of this substance suffer decomposition. It would therefore almost appear to produce the effect by what has been termed an action of presence, and by Berzelius denominated catalysis.

In brewing and distilling, and in vinegar-making in this country, the substance fermented is malt, in which the starch that the grain contains has by inceptive vegetation been converted into sugar, and thus rendered fermentible.

In the acetous fermentation the materials employed are similar to those used for the vinous; but the temperature employed is higher. Little acetic acid is produced unless atmospheric air be present, the oxygen of which may be regarded as dividing the acquiescent proportions of oxygen and carbon to constitute acetic acid; but as alcohol may be converted into vinegar, as indeed is practised in wine countries, it is possible, even when vinegar is produced from malt, that the process of formation of alcohol may occur, and that view will best explain what happens, and show that by the mere absorption of oxygen so as to form water, and without the evolution of any carbonic acid, acetic acid may be formed thus:

\[
\text{Hydrogen. Carbon. Oxygen.}
\]

Two equivalents of alcohol = 6
One equiv. of acetic acid = 4
0.5 equiv. of alcohol = 3
0.5 equiv. of alcohol = 3
3 equiv. of carbon remain entirely in the acetic acid produced. [Acetic Acid.]

The constitution of acetic acid is then 3 equivalents of hydrogen, 4 equivalents of oxygen, and 3 equivalents of water, while the 4 equivalents of carbon remain entirely in the acetic acid produced. [Acetic Acid.]

With respect to the putrefactive fermentation, it is to be observed that it is the spontaneous decay and decomposition of vegetable and animal matter produced by putrefaction that produces the alcohol or acetic acid. In vegetable putrefactive fermentation the principal product is carbonic acid, and probably water, both derived from the absorption of the oxygen of the air, which unites with the hydrogen and carbon of the vegetable matter. In the putrefactive fermentation of animal matter ammonium is a very usual product, owing to the presence of azote, which enters largely into the composition of animal matter in general, and thus, by uniting with the hydrogen, the alkali is formed and produced.

FERMO ED A’SOlli, is the name of a Delegazione or province of the Papal State, east of the Apennines, bounted on the east by the Adriatic, on the north and north-west by the province of Macerata, on the west by the province of Ancona, and on the south by the Abruzzi. It forms part of the old province of the Papal State called the Marches, the ancient Picenum, which is now subdivided into three provinces, Ancona, Macerata, and Fermo. The province of Fermo is hilly, being occupied by various offsets of the Apennines, which, detaching themselves from the central ridge extend to the coast. The Apennines and form numerous valleys watered by rivers or rather torrents, the principal of which are, from north to south, the Chienti, the Tenno, the Ao, the Tesino and the Tronto. The province along the Adriatic coast is 30 miles, and its breadth from the sea to the central Apennines is about the same. The area is about 1070 English square miles and its population 160,000 inhabitants. (Calidri Saggio Storico dello Stato Pontificio; Neibaur, Gemäelde Italiens.) The chief produce of the country consists in corn and cattle; wine and oil are also made. The principal towns are—1st, Ascoli with 12,000 inhabitants, built on the river Torino, which rises in the Molise hills, built on high ground, about four miles from the sea, and surrounded by old walls and ditches, with several churches and convents, and 6000 inhabitants, who carry on some trade by means of the neighbouring small harbour of Macerata. The second town is Ancona, famed for its woollen cloth. The ancient Firmum, a town of the Piceans, afterwards a Roman municipium, was destroyed in the fifth century by Alaric, and the present town was rebuilt near its ruins. 3rd, Sen’Eldipo, not far from the mouth of the river Tenna, has 3600 inhabitants, and is the seat of the Bishop of Perticara. A Roman road runs from 12 towns of 3000 miles from the coast and near the Teseio, has 2000 inhabitants. 5th, Grottamara, a thriving town on the coast near the site of Cupra Maritima, an ancient Etruscan colony, carries on some trade by sea, has some sugar refiners, and about 4000 inhabitants. Pope Sixtus V. was born in this place. 6th, Offida, on a hill south of the Teseino, has a handsome collegiate church, some manufactories of lace, and about 3000 inhabitants. 7th, Montalto, a walled town but decayed, has only 600 inhabitants.

FERMOY, the town of the barony and county of Condomns and Clongibbons, in the county of Cork, in Ireland, situated on the third fork of the Blackwater, on the great southern road leading from Dublin to Cork, distant from Dublin 112 Irish, or 142 English miles.

The town of Fermoy owes its origin to its late proprietor, Mr. Anderson, the introducer of malt-coach travelling to Munster. This enterprising individual began to build here about the beginning of the present century. The site being of equal importance in a military as in a commercial point of view, the government felt it expedient to second his design by the erection of very extensive barracks. An act was obtained for providing the town with a police; and various manufactories, including a brewery, paper-mill, and botling-mill, were set on foot by Mr. Anderson. In the erection of all the buildings which were observed, and hence Fermoy presents an appearance of neatness and uniformity very rare among Irish towns. In 1815 trade in Fermoy was very brisk, but has since materially declined. The manufacture of ale and the purchase of corn are still carried on to a considerable extent, but want of employment is nevertheless severely felt.

The appearance of Fermoy is imposing: the town extends on each side of a handsome square, facing the church, which is the midst, 3rd. The design by Hargrave, which is much admired: there is also a chapel, or a church of Wesleyan Methodists. The barracks, which are very extensive, occupy the brow of a bold elevation on the opposite side of the river. The surrounding country is very beautiful, which is confirmed by the number of resident gentry considerable. The place is very important as a ferry station, and the garrison generally consists of several regiments. The population of Fermoy in 1821 was 6702, and in 1831 was 6975, the garrison included. In the parish of Fermoy there were in 1836 thirteen schools educating 470 males and 294 females. In the Fermoy National School, established Sept. 1833, there is an average daily attendance of 270 young persons. (Townsend’s Statistical Survey of Cork, Cork, 1813; Inglis’s Ireland in 1834; Parliamentary Report.)

FERNANDEZ, JOAN, a Portuguese, the first European who visited the interior of Africa. In 1446 he joined a Portuguese expedition of discovery, and from an ardent desire to procure information for Prince Henry, he got leave to remain among the Assenaij, or wanderers of the great African desert, in its Fezzan extremity. His account has been strikingly corroborated in our days by that of Mango Park. (Kerr’s Systematic Collection of Voyages and Travels, ii. p. 190.)

FERNANDEZ, DENIS, a Portuguese navigator, who, in 1446, traversed the river Senegal and Cape Verde.

FERNANDEZ, NAVARRETE, surnamed El Mudo (the dumb), born 1526 at Logroño, in the Ebro, became a distinguished pupil of Titian, and painter of Philip II, who employed him chiefly at the Escorial. His principal work is Abraham with the Three Angels. He painted with great ease and dispatch. On account of his colouring he was
called the Spanish Titian. There are many of his paintings in the Louvre.

FERNANDEZ, FRANCISCO, born at Madrid, 1604, was, according to Palomino, one of the most ingenious painters of his time. He was employed by Philip IV. of Spain to execute his portrait in the months of December, 1637, and February, 1638, and was annually called Juan Fernandez, is situated in 33° 40' S. lat. and about 100° W. long. Massaterra, which is more than 3° farther west, in the same latitude, is a heap of immense rocks rising precipitously from the sea to the height of 2000 feet and more, without any convenient landing-place. Massaterra, the larger of the two, is about 18 miles long, but only 6 miles across in its widest part. Its northern half is also an elevated mass of trap and basalt rocks, fringed with pleasant valleys and mostly covered with wood; its southern portion only that raised above the water is rocky and barren. Towards the northern extremity is Cumberland Bay, which affords safe anchorage for vessels of any size. Goats in a wild state are found here; and on the rocky shores seals and sea-lions. Fish are very plentiful, especially mackerel, hake, herrings, and cod. There is one island discovered by Europeans. The Buccaneers of the seventeenth century finding them uninhabited, made them a place of resort during their cruises on the coasts of South America. On one occasion, a Scottiah named Alexander Seals, an island, 'island formed of the bones of men and their domestic animals, lived there more than four years. His adventures are common, though incorrectly, said to have supplied Defoe with materials for his Robinson Crusoe. Lord Anson refitted his vessels here in 1741, and in 1749 the Spaniards formed a settlement, which was afterward abandoned, and remained without inhabitants up to 1819, when the republic of Chile occupied it for the purpose of using it for state prisoners, but it has been abandoned by them also. It is said that some Americans and Tahitians here lately settled in Cumberland Bay. The island is very subject to earthquakes. In 1751 the small Spanish settlement was nearly ruined; the sea rose and overwhelmed the houses near the sea-shore, and thirty-five persons perished. In 1835 an eruption burst through the sea near the town of San Juan, and the sea immediately became a sheet of water, the depth is from 50 to 80 fathoms; smoke and water were thrown out during the greater part of the day, and flames were seen at night. In the present year (1837) the newspapers have reported that the whole island has been sunk to the bottom, and that the sight is covered over by the ocean. The question requires confirmation. (Anson's Voyage; London Geographical Journal, iv. and vi.; Campaigns and Cruises in Venezuela and New Granada, &c.; Meyen's Reise um die Welt; Ullio's Voyage to South America; Byron's Voyage; Cretser's Voyage; Ezplotan's Capit. Moos's MS., published in the Athenaeum, vol. i. p. 581.)

FERNANDO PO, an island situated on the western coast of Africa, in the Bight of Bimen, 3° 29' N. lat. and 5° 36' E. long., is about twenty-four miles long, and sixteen wide. It is the site of a natural harbor, and is divided into two summits, whose elevation is estimated at more than 2000 feet above the sea. It is mostly covered with wood, and is everywhere well watered and fertile. Yams, palms, and other tropical plants, are grown abundantly; and turtles and fish are plentiful. The climate is considered healthy. There are several small harbours; the largest is Maidstone Bay, on the northern shore, which is formed by a headland called Point William, rising 150 feet above the sea, on which stands the English settlement of the same name, discovered in 1471 by the Portuguese, who in 1778 ceded it to Spain. The Spanish government tried to settle it, but the inhabitants destroyed the colony. These natives are not so black as the negroes, and their hair is longer, which some ascribe to their mixture with Spanish blood; their number amounts to about 1200. In 1827 the English, with the permission of Spain, took possession of the island, which promises to be of importance, since it has been discovered that the Joliba or Quorra, the largest of the African rivers, falls into the sea by several channels nearly opposite Fernando Po. This island is also of importance for the suppression of the slave trade, which cannot be so effectively checked from any other point on this island. (Monnard, Gemakhte Kust van Guinea.)

FERNEY, [Ain.]

FERNS, a bishop's see in the archdiocese of Dublin, in Ireland. The chapter consists of a dean, precentor, chancellor, treasurer, archdeacon, and ten prebendaries. This diocese occupies the whole of the county of Wexford, and a small part of the county of Wicklow. In 1792 it was divided into 143 parishes, consisting 40 benefices and contained 40 churches of the establishment. In 1834 the diocese contained 140 and 121 parishes, consisting of the establishment, 62; other places of worship in connection therewith, 2; Roman Catholic churches of worship, 91; Presbyterian, 1; and other Protestant dissenting, do., 14. In the latter year the gross population of the diocese was 177,780, of whom there were 24,672 members of the established church, 172,780 Roman Catholics, 19 Presbyterians, and 300 other Protestant dissenters, being in the proportion of one Protestant, of whatever denomination, to seven Roman Catholics nearly. There were at the same time in the diocese 60,000 Irish, or adherents of the Protestant religion, in the number of 20,000 persons, being in the proportion of 8½ per cent of the entire population under daily instruction, in which respect Ferns stands thirteenth among the thirty-two dioceses of Ireland. Of the above schools, 19 were in connection with the National Education Act. This diocese was founded about a.d. 598 by St. Edan, otherwise Moedoc, who had received a grant of Ferns from Brandubh, king of Leinster. During the life of Edan this see ranked as an archbishopric, and was head of the ecclesia Gaillarica. It was united with the see of Leighlin in the year 1600, which union still subsists; and is by 3rd and 4th William IV. c. 37 farther increased by the addition of the see of Ossory when next void.

The town of Ferns is a place of considerable antiquity, but much desolated. There are: the see of Ferns, a diocese, and an archbishopric, therewith, Dr. Cope, and barony of Scarewath, in the county of Wexford. The cathedral, which is also the parish church, is a mean building; but the palace, built by Dr. Cope, is handsome and commodious. There are some remains of an abbey founded by Dermot Mac Murchad, who built a ruined castle, said to have been his residence at the time of the English invasion. In 1831 Ferns contained 571 inhabitants. (Beaufort's Memoir of a Map of Ireland; Rept. of Commissioners, &c.)

FERRARA, LEGAZIONE DI, the most northern province of the papal state, situated for the greater part within the Delta of the Po, is bounded on the north by the main branch of that river called Po d'Ariano, which divides it from Austrian territory, and from the Adriatic to the west by the duchy of Modena, and on the south by the legations or provinces of Ravenna and Bologna. Its greatest length east to west is about 50 miles, and its greatest breadth 33 miles, but it becomes much narrower towards its western extremity. The area is reckoned at 1106 English square miles, and the population at 205,000 inhabitants, distributed among 5 cities or walled towns, 17 terre or small towns having a communal council, and 153 ville or villages and hamlets. (Calcindri and Negebaur.) The cities are: 1. Ferrara; 2. Comacchio, with 5400 inhabitants, situated on an island in the midst of extensive swamps which communicate with the Adriatic, and receive its water; these swamps, called le Valli di Comacchio, are divided into extensive demesnes, where numerous species of fish of various sorts, and especially large eels, are caught here and pickled at Comacchio for exportation. A curious description of the habits, industry, and diversions of the people of this peculiar district is given by Bonnycastle. Don Giovanni, de dans Lagun, e Pesche, fol. 1761. 3. Cento, with 4000 inhabitants. 4. Lugo, with 8800 inhabitants, in the southern part of the province, near the borders of Ravenna: this
town was plundered and nearly destroyed, in 1796, for having revolted against the French. 5. Bagnacevallo, with 3500. Among the terre or communies, the principal ones are: Argenta, with 4000 inhabitants, including its territory; Badoli, with 3500; and Pagazzano, with 3500, of which 8000 belong to the Abbey of Attendolo, the celebrated Condottiere of the fourteenth century and the head of the ducal house of Sforza, has 36000 inhabitants; Fossignano, the birth-place of the musical composer Corelli and of the poet Monti, has 4500; Mesola, with 4000; lies near the principal estuary of the Po, near the town of Porto d’Oro, and has a considerable tract of forest to the south of it, extending along the sea-coast as far as the mouth of the Po; and, abounding with game, wild boars, deer, &c.; Fiere di Cento has 5300 inhabitants; Fondo di Lagescu, a frontier town and custom-house on the right bank of the Po, and on the high road leading from Austrian Lombardy into the papal state, has 3600 inhabitants; Porto Maggiore has 6500.

The air in general throughout the greater part of the province is healthy, especially in the vicinity of the great swamps, is more or less wholesome, particularly in summer, though malaria is not quite so bad as in the southern marenne or in the Pompinese marshes. The country is flat, and in many parts much below the level of the Po, the water of which is kept very low by the river sometimes breaks through and produces dreadful inundations. The cost of keeping the dykes in repair is one of the heaviest charges on the province, and watching the rising of the river during the floods is a constant care of the local inhabitants. The springs of the Apennines, though itself into three principal branches—the main one, or Po d’Ariano, the Po di Volano, and the Po di Primaro or southernmost branch, which last receives the Reno, the Santerno, the Senio, and other numerous streams which flow from the Apennines in the vicinity, is about 4° 46’ long. Ferrara is enclosed by walls, and defended on the west side by a citadel regularly fortified, which, agreeably to a stipulation of the congress of Vienna, is garrisoned by Austrian soldiers, whilst the rest of the city is occupied by the Macchino. In the middle of the town is a castle, flanked with towers and surrounded by wet ditches, which was once the residence of the dukes, and is now that of the legate. Ferrara has numerous churches, most of them rich in paintings of every description, the Caracci, and other great masters of the Bolognese school, and also by Garofalo, Bastianino, Ortolano, and other painters natives of Ferrara, who are classed by some as forming a separate school, called that of Ferrara. The finest churches are: the cathedral, the twelfth century, with its ciborium, bronze statues, and frescoes; San Benedetto, in which Ariosto was buried; his monument however has been transferred to the Lyceum; in the hall of the refectory of the adjoining convent is the painting of the Paradise, by Leonardo, the Psalter, in the cardinal, in which Ariosto took a deep and lasting impression; the likeness of the poet; San Domenico, which has several valuable paintings and the monument of Celio Calcagnini, one of the restorers of learning in the sixteenth; Santa Maria del Vallo, the oldest church of Ferrara, which is also remarkable for its fine paintings, and is the residence of the Archbishops. Ferrara is the birth-place of Ariosto, a learned and prolific writer, the author of a Greek romance, the Orlando Furioso, and has besides numerous artists and musicians. Ferrara is the birthplace of Corelli, of the poet Monti, of the poet Monti, and of the painter Corelli, who was a native of this city. Ferrara is the birthplace of Corelli, and of Corelli, and of the poet Monti, of the painter Corelli, and of Corelli, and of the poet Monti, of the painter Corelli, and of Corelli, and of the poet Monti, of the painter Corelli, and of Corelli, and of the poet Monti, of the painter Corelli.

**FERRARA** and FERRARI, the names of two Italian mathematicians, who were nearly contemporary with each other, and who, with various other illustrious men of science (Cossali calls him Ferro and Dal Ferro) was a native of Bologna, and taught mathematics there from 1456 to 1526. He is said to have been the first who possessed a method of solving by rules of cubic equations; this method he communicated to his pupil Antonio Del Ferro, who afterwards presented it to Tartaglia as a challenge; and, this is also said, was the cause of the latter turning his attention to the subject.

Ludovico Ferrari was also born at Bologna, and was the pupil of Cardano. At the instigation of the latter, he turned his attention to biquadratic equations, and produced the method known by his name, being the first which had been invented. The method is found in the works of Cardano (from whom the account of Ferrari is taken), and is still the basis of algebra which treat on the solution of equations.

**FERRERA, ANTONIO,** the reformer of the national poetry of Portugal, and a native of Bologna, was born in the town of San Giovanni in the Apennines of the Apennines, and was educated at the University of Bologna, where he devoted himself to the study of legal science, and to the study of law at Coimbra. He devoted his time more particularly to musical and Italian literature, and composed his drama of 'O Bristo' (which is the name of the principal character) to which he gave subsequently a much higher polish. Growing tired of a universal pursuit, he went to Lisbon, where he obtained a dignified situation, and while entertaining still higher expectations he was carried off in the prime of life by the plague in 1569.

Although not a first-rate poet in imagination and originality, he was well timed with correctness, and deep thought. He often succeeded in making poetry elevate the mind and warming the heart. His sonnets, without displaying any affected imitation of Petrarcha's, remind us of the Italian poet and his Lucrè. His odes and his sonnets have great merit in the expression, but the former want the genuine lyrical spirit, and the latter the simplicity of the syllable; qualities perhaps irreconcilable with Ferrera's philosophical turn of mind and didactic seriousness. Among his elegies, one that on May is a classic masterpiece. His epistles, which were deficient in elegance, are the long poems and the productions of the kind in Portuguese literature. His tragedy of 'Ines de Castro', written about the same time that the Dominican Bermudez wrote the similar and superior one in Spanish of 'Nise Lantinosa', abounds with sentiment and sublimity. He pretended that he produced it himself, is shown to strangers, but his favorite garden has disappeared; the old house of his family, in which he had brought up, still exists, and is called Casa degli Ariosti. The University of Ferrara, which is attended by about 300 students, has a valuable library of 80,000 printed volumes and 900 MSS., among which are autographs of Ariosto, Tasso, Guarini, and many editions of the fifteenth and sixteenth centuries, when the presses of Ferrara were in great activity. The building in which it is situated (l'Oratorio della Compagnia di Gesù), was erected in 1602, and was called the House of the Jesuits. It is built in the sixteenth century. Its present state of decay has been somewhat exaggerated: it lost part of its population in the seventeenth century, in consequence of having lost its sovereignty (Ferrara, and becoming a provincial town; but it is now again on the increase. It was rent from 30,000, which it reckoned under Napoleon, to 31,000 inhabitants, of whom above 2000 are Jews, who occupy a separate quarter, and have a synagogue.

(Valey, *Voyages littéraires en Italie, et Calendrier, Saggio Stistico*) It carries on a considerable trade in corn and other produce of the soil. Society is said to be very agreeable at Ferrara, and its natives hospitably inclined towards strangers. The air, though not positively bad, is not very wholesome, on account of its situation. (Frizzi, *Memorie per la Storia di Ferrara*, and *Guida di Ferrara*, 1857. Torre della Calzata, Ferrara; and Ferrarensi; and Barotti, *Pitture e Sculture di quivi trociano nelle Chiese e Luoghi pubblici di Ferrara*.)
been considered as the second regular tragedy produced after the revival of letters in Europe. His 'Poesas Lusitanos' appeared at Lisbon first in 1598, 4to; and all his works were printed under the direction of his 'acolytes' or 'followers' of the 'Academia de Poetas de Asturias' at the head of the literati who founded the academy of the Lenguas Espanolas in 1713, and he was a very useful member of that body, especially in the compilation of its dictionary, in 6 vols., folio, published in 1726-1739, to which he contributed the articles in the letter G, besides a preliminary discourse on the Castilian tongue. At his death, 1735, in addition to his other appointments, he held that of librarian to Philip V. Ferreiras, though not so elegant a writer as Mariano, is much more to be depended upon. He wrote in all thirty-eight works, in which he has shown himself a man of great acuteness. Perhaps the most important is the 'Synopsis Historica y Chronologica de España,' Madrid, 1700—1727, 16 vols., 4to. It extends to the close of Philip II.'s reign in 1588, and not merely to the three years previous to the capture of Granada, as it is very strongly colored in the works of the biographer of Ferreiras, after mentioning its reaching to the year 589, which is near a century after the re-conquest of Granada. Hermans translated it into French, with valuable notes, in 10 vols., 4to, Paris, 1742.

FERRET. [Mustelide.] Ferro, or Hierro, is a small island belonging to the group of the Canaries. [Canaries.] Its surface occupies only 74 square leagues, and the population is about 12,000. The name Ferro is familiar to most persons from the circumstance of the first meridian having been drawn through it. Greenwich is supposed to have a meridian circle which should intersect only the seas that divide the old from the new continent, and none such existing but that which traverses the island of Ferro and cuts off only a small part of the north-eastern extremity of Asia, this island was accordingly selected to act as the point of departure for the meridian of navigation. However, it was necessary that charts should be constructed with reference to the meridian of a place where chronometers could be adjusted with the greatest exactness. Accordingly, the first meridian was removed from Greenwich, and the point to which observations are erected, by the English to Greenwich, by the French to Paris, and by the Spaniards to Cadiz. The French finding that Paris was nearly 20' 30' east of Ferro, removed the first geographical meridian to nearly 30' east of Ferro; so that to present the island of Ferro is considered as being about 30' west of the meridian of Ferro. The meridian of Greenwich is 17° 41' east of that of Ferro, and the meridian of Cadiz 6° 16' west of Greenwich, or 11° 29' east of Ferro. Other nations, whose navigation is more carefully conducted, have also English charts, and hence the meridians of their own observation have been mentioned except in scientific works.

FERROCYANIC ACID was discovered by Porret, and by him called ferruretted chaeric acid. He procured it from the decomposition of ferrocyanide of potassium by the action of tartaric acid, or from ferrocyanide of baryta by means of sulphuric acid. According to Berzelius it is best prepared by diffusing recently precipitated ferrocyanide of copper or lead through water, and passing hydrosulphuretic acid through the copper precipitate, and then precipitating the copper or lead in the state of sulphuret, while the hydrogen sulphuretting with the cyanogen and iron they form ferrocyanic acid, composed of (when dry and not crystallized)—

| Hydrocyanic acid | 46.57 |
| Cyano of iron | 40.57 |
| Water | 7.56 |

and it contains 23.27 per cent. of iron.

P. C., No. 625.

Any excess of sulphuric acid is to be got rid of by adding ferrocyanide of the metal employed. The solution should be quickly filtered and evaporated in vacuo over sulphuretted hydrogen. The precipitate is then redissolved in water, when the solution is in a small vessel, which should be soon boiled, and the precipitate is filtered off, washed, and dried. This acid is decomposed by long exposure to the air, Prussian blue being formed and precipitated; this is also produced by adding it to a pericel of iron.

The aqueous solution is also decomposed by boiling; and when submitted to destructive distillation it yields hydrocyanic acid, hydrocyanate, and carbonate of ammonia, and carburet of iron remains.

Ferrolo, a sea-port town of Galicia in Spain, on a bay which is an arm of the bay of Bocadilla, or of Coquina, from which last town Ferrol is fifteen miles distant to the north-east across the bay, but the communication by land is much longer. The port of Ferrol is large and safe, and its entrance is defended by strong batteries. There are extensive docks for the Spanish navy. Ferrol being one of the three royal dockyards: Castellana and Aegina are the other two. The town of Ferrol is regularly built, the streets crossing each other at right angles. It has a school of navigation, about 13,000 inhabitants, some manufactures and churches, it is celebrated for its wines, figs, and sardines, which are pickled and exported. The timber for ship-building comes from Asturies, and the hemp for cables from Aragon; but the coal and tar are brought in by foreign vessels. Ferrol carries on some trade with America, exporting the wine, brandy, and corn of Galicia and other parts of Spain. It is the residence of a commandant-general, and other chief officers of the naval department, which however, owing to the present decay of the Spanish navy, is not in a very active condition. Miniano, in his 'Suplemento al Diccionario Geografico de Espana,' gives a plan of Ferrol, and an interesting article on its docks which are among the finest in Europe.

FERRY, an exclusive privilege by prescription or the king's grant for the carriage of horses and men across a river or arm of the sea for reasonable toll. The owner of a ferry cannot suppress it and put up a barrier in its stead without a license; but he is bound to keep it always in repair and readiness, with expert men, and reasonable toll, for neglect of which he is liable to be punished by indictment. And therefore if a ferry is erected so near to another frequent ferry as to be an obstruction and not to be of use, the owner of the old one, for which the law will give him remedy by action. The ferry is in respect of the landing place, and not of the water, and in every ferry the land on both sides ought originally to have been in the same ownership; if not, then one party has no right to build a ferry in the other's land, and the two lateral ones are distant, obsolete, or lost in the edge. In each channel there are three or more vitres, and on the commissure four, or a great many. The flowers are always yellow, and the stem solid, its cavity being filled with a spongy substance, in which fibres are vaguely dispersed.

The drugs called Sagapennum and Assafetida are produced by species of this genus, but by which in particular is not known with certainty; and it appears probable that in fact several different species are united under these names.

1. Assafetida, as the more important, deserves notice first. Kämpfer, whose account is by far the best we have of this plant (Amanitas Ezoicola, p. 537), says that it is found in

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only two districts of Persia, namely, the fields and moun-
tains of Herat, the capital of Khorassan, and the range of
mountains in the province of Lar (Laristan), extending
from the river Cur as far as the town of Congon, along
the whole coast of the Gulf. But even here the plants do
not always yield the drug; that it is only those of the desert near Herat and of the
mountains round Disqusun in Laristan that furnish it; and
finally he figures a plant, with a naked simple stem,
covered with leaves and umbels without involucre,
useful for producing a coarse woody root rising above the ground, and pinnate
leaves with pinnatifid segments and oblong obtuse lobes.
This plant is the Ferula Asafoetida of Linnaeus and De
Candolle; what is supposed to be it has since been met
with in Beloobachistan, and Lieut. Burnes states that he calls
it Sos-foetida, or some other name. In the春天 of departure of
Hindo Kooch at an elevation of 7000 feet. He states that
it is an annual, and grows to the height of 8 or 10 feet,
when it withers and decays. The milk which it exudes is
first white, and then turns yellow and hardens, in which
state it is put in hair bags and exported. Sheep browse
upon the tender shoots, which are believed to be highly
nutritious. (Travels, ii. 243.) It is however by no means
certain that this was true asafoetida. Indeed if it was,
as Lieut. Burnes states, an annual, it must have been some
other species of Ferula, as expressed in the French
language fou nefs, or asafoetida, as 'ad pluris ammos restihilbem,
imnagnam, ponderosam, nudam,' and in fact it is from wounds
in this root that the gum-resin flows. We may however be
pretty certain that asafoetida is in fact yielded by different
plants, and as Lieut. Burnes states, that the umbels
are roads from the friendly merchants of the Neapolitan
bazaar in India; and it appears from a communication
made to Mr. Maceneil from a medical gentleman at Soo-
meeran, in Beloobachistan, that in that province a kind of
ferula called hooshee yields a similar product, which
however is not collected.
The F. asafoetida is said to arrive at as great an age as
man himself, and in consequence its roots sometimes attain
a considerable size. It is from wounds in this part that
the drug is obtained. The roots are not wounded before
their first year, or the second; the greater part of the
quality of their produce. There were four operations
each year by which Kumperk visited the country; the first in the
middle of April, the second at the latter end of May,
the third ten days later, and the fourth in the beginning
of June. The gatherers on the first occasion only cleared
the hard sandy or stony soil away from the root to the
dept of a span or so, pulling off the leaves, replacing the
earth about the roots, and then heaping the leaves on them,
presuming them down on a stone. On the subsequent oc-
casions they size the roots, transverse beginning a little
below the umbels, collecting the juice that flows from
the wounds. After every operation they cover the root with
the old leaves to screen it from the sun. After the last
gathering the screens are thrown away, and the roots are
left to dry.
2. Ferula Persica, a perennial species with a glaucous
stem and subcuneate compound leaves with linear seg-
ments, has been reported to yield asafoetida. Dr. Hope
entertained this opinion, from which Nees and Ebermaier
do not dissent. Travancor found it yielding a substance
extremely like asafoetida, in the botanic garden of Breslau;
and the same thing has often occurred in the Apothecaries' Garden at Chelsea.
Nevertheless, Fée suspects, after
Wildenow, that it is rather the origin of sagapenum.
Olivier believed it to produce gum ammoniacum; but ac-
cording to Dr. Don, that drug is yielded by his De-
rema ammoniacum.
3. Ferula orientalis has also been quoted as the source
of gum ammoniacum; and it appears that such a substance
is really produced, either by that plant or a nearly allied
species, common by the name of Maro Dione.
4. Ferula furlage has been taken for the plant which
furnishes galbanum; but Professor Don states that this
drug is really yielded by quite a different genus, called by
him Galbanum officinale.
5. Ferula officinalis established by M. Grateloup for
a fossil turboished plant from Dux, which seems at first view
very near the Anisomantia, but which M. Grateloup thinks,
from the examination of its aperture, approximates more to the
Cyclotonomy, an opinion in which M. Rang concurs,
adding that the species, three or four, are all fossil. It is
the same shell, he states, that as afterwards described in
the first number (division) of the Bulletin of the Linnean
Society of Bordeaux, under the name of Strophosoma by
M. Deshayes.

Generic Character.—Animal unknown. Shell oval, glo-
bose, moderately thick, simple, smooth without
parting, under the felts of the lip.

FESCENNINE VERSES were rude licentious verses
sung by young men at weddings, and before the door of the
principal chamber. This custom is said to have been
practised by the Trocmes; and some of the verses themselves,
are said to have been introduced from Fescennium, an old
Irish town near the present site of Civita Castellana.
Festus and others derive the name Fescennine from
fescennum, 'a charm or evil influence, which was supposed
to have been when assembled in the town of Fescennium.'
Very little is known of the strength, and which the Fescennine verses were intended to
avert. Valletta, a Neapolitan lawyer and poet of the 18th
century, has written a curious book on the 'Fescino,' or
fescennine, the belief of which is still prevalent in Naples.
The Fescennine verses were distinct from the epithalamion,
which were more refined and regular compositions.

Epithalamium] Horace (Epist. ii. 1) says that Fescennine
verses were sung by the country people at harvest time;
and the custom of dealing out licentious jokes upon each
other was also performed by the strangers passing by, is still retained by the
vintagers in various parts of Italy. The name of Fescennine
was given in general to licentious and satirical epigrams.

Octavianus is said to have written some of this character
against Publius, in the time of the Triumvirate.

FESTUCUS, a genus of grasses containing several
species of agricultural importance. It is known among
British grasses by having many flowered spikelets, the lower
pairs of which are neither awned as in Bromus, nor blunted as in
Poa and its allies, but terminated gradually in a hard sharp
point.

F. pratensis, or meadow fescue, is about three feet high,
with a nearly upright branched one-sided panicle and broad
course leaves. It is a native of moist meadows, and forms
crops of considerable size. It is a very ancient Roman
species, and is well known as having been cultivated in
the dearth of food in the third century. The grass is
produced in a number of counties, and is used in
pastures. F. pratensis has a fine succulent foliage, and, according to Linnaeus, sheep have no
relish for hills on which it does not abound; it is, however,
unproductive. F. rubra is more abundant in its produce,
less nutritive, and more cropping than F. pratensis, and
it is right to say it is not very fine. F. durvica is preferable to both the preceding; it withstands dry weather better
than most grasses, and in combination with Festucia
brevisi and Poa trivialis forms excellent pastureage.

It is most prevalent on light rich soils. F. damascorum
is a very ancient species, which will thrive in dry sandy situations, to which proper
its value is chiefly owing; but its nutritive qualities
are slight, and it is altogether an inferior species. See
Hortus Graminum Woburnensis.

FESTUS, SEXTUS POMPONIUS, a celebrated Latin
grammarian, whose age is not clearly ascertained, though
seems reason to believe that he lived in the third cen-
tury of our era. He compiled an epitome of the voluminous
work 'De Verborum Significatione' of Marcus Verrius
Flaccus, a grammarian of the Augustan age, mentioned
by Suetonius. For the work of Verrius is lost and that
being afterwards abridged in the ninth century by Paulus
Diaconus, who spoiled it, the text of the epitome became
lost also for several centuries, until a mutilated copy, found
in Dalmatia, came into the hands of Aldo Manuzio, who
published it together with the remainder of Paulus Dia-
conus. Other fragments were found in the Fastiungen
library, and Antonius Augustinus, Joseph Scaliger, and
Pulvisinus Uninius published improved editions of Festus
'De Verborum Significatione.' Lastly, A. Dacier published
it in Latin, Paris, 1631; and L. J. B. Lecoy printed the notes
of Scaliger, Augustinus, and Ursinus. Dacier's edition
was reprinted at Amsterdam in 1699. Festus, in a passage
of his work under the head 'Profun," refers to another
vocabulary which he had written explanatory of ancient Latin
words which had become obsolete, 'Prosognum Verborum
Libri eum Exemplis,' which words he left out in his epitome
of Marcus Verrius. This work, 'Priscorum Verhorum,' is lost. Festus gives not only the meaning, but also in most instances the etymology, of words, with references to the ancient texts. From his book, though incomplete, is justly classed by Scaliger among the most useful for understanding the language of antient Rome.

FEUDAL SYSTEM.

In treating of this subject we shall endeavour to present a concise and clear view of the principles of what is called the feudal system, to indicate the great stages of its history, especially in our own country, and to state briefly the leading considerations to be taken into account in forming an estimate of its influence on the civilization of modern Europe.

The essential constituent and distinguishing characteristic of the species of estate called a feud or fief was from the first, and always continued to be, that it was not an estate of absolute and independent ownership. The property, or dominium directum, as it was called, remained in the grantor of the estate. The person to whom it was granted did not become its owner, but only its tenant or holder. There is no direct proof that fief or feud was originally resumable at pleasure, and Mr. Hallam, in his 'State of Europe during the Middle Ages,' has expressed his doubts if this were ever the case; but, as he admits, it is laid down in almost every writer on the feudal system, and, if not to be made out at a certainty, at least, if not by general consideration, by any proof. These derivations, in fact, are hardly better than another resolution of the puzzle that has been made up of the initial letters of the words 'fidelis ero, ubique domino vero.'

The chief Teutonic etymologies proposed have been from the old German fōda, the Danish føde, or the modern German fehl, all meaning battle, feud, or war. The word Fudum has been derived by some from a Latin, by others from a Teutonic root. The principal Latin origin proposed are feudus (a treaty) and fides (faith). The supposition of the transformation of either of these into feudum seems unsupported by any proof. These derivations, in fact, are hardly better than another resolution of the puzzle that has been made up of the initial letters of the words 'fidelis ero, ubique domino vero.'

These being established as the true character of a primitive feud or fief, it may perhaps throw some light upon the much disputed etymology and true meaning of the word. Feudum has been derived by some from a Latin, by others from a Teutonic root. The principal Latin origins proposed are feudus (a treaty) and fides (faith). The supposition of the transformation of either of these into feudum seems unsupported by any proof. These derivations, in fact, are hardly better than another resolution of the puzzle that has been made up of the initial letters of the words 'fidelis ero, ubique domino vero.'

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importance, namely, that the original vassal or vassals were merely noblemen who attached themselves to the court and to attendance upon the prince, without necessarily holding any landed estate or beneficium by royal grant. In this sense the words occur in the early part of the ninth century, and have been derived either from the Carolingian and from the German gesell, which are probably the same word, and of both of which the original signification seems to be a helper, or subordinate associate, in labour of any kind. If the vassal was at first merely the associate of or attendant upon his lord, nothing would be more natural than that, when the latter came to have land to give away, he should most frequently bestow it upon his vassals, both as a reward for their past and a bond by which he might secure their future services. If the peculiar form of tenure consisting of service did not exist, he would have no very case which would suggest it. At all events, nothing could be more perfectly adapted to these circumstances. The vassal was entitled to a recompense; at the same time it was not the interest of the prince to sever their connexion, and to allow him to become independent; probably that was as little the desire of the vassal himself; he was conveniently and appropriately rewarded therefore by a fief, that is, by a loan of land, the profits of which were left to him as entirely as if he had obtained the ownership of it. This would naturally happen, as a result of the change, and at the same time, kept him bound to his lord in the same dependence as before.

Here then we have the union of the feud and vassalage—two things which remained intimately and inseparably connected, and the feudal system was not, consequently, as it afterwards appeared, as we have seen, to have been originally quite distinct, and merely to have been thrown into combination by circumstances. At first it is probable that, as there were vassals who were not feudatories, so there were feudatories who were not vassals. But soon, when the advantage of the association of the two characters came to be perceived, it would be established as essential to the completeness of each. Every vassal would receive a fief, and every person to whom a fief was granted was thereby entitled to the rights which were vested in the holder of a fief would come to signify, as they eventually did, one and the same thing.

Fiefs, as already intimated, are generally supposed to have been at first entirely precarious, that is to say, resumable at any time at the pleasure of the grantor. But if this state of things ever existed, it probably did not last long. Even from the first it is most probable that many fiefs were granted for a certain term of years or for life. And in those of all kinds a substitute for the original precarious tenure was soon found, which while it equally secured the rights and interests of the lord, was much more honourable and in every way more advantageous for the vassal. This was the method of attaching him by certain oaths and solemn forms, which, besides their formality, were instinct with feelings of attachment which also appeal also to men's moral feelings, and which therefore it was accounted not only impious but infamous to violate. The relation binding the vassal to his lord was made to wear all the appearance of a mutual interchange of benefits,—of bounty and protection, on the one hand, of gratitude and service due on the other; and so strongly did this view of the matter take possession of men's minds, that in the feudal ages even the ties of natural relationship were looked upon as of inferior obligation to the artificial bond of vassalage.

At this stage the position of the vassal had thus been made stable and secure, various changes would gradually introduce themselves. The vassal would begin to have his fixed rights as well as his lord, the oath which he had taken measuring and determining both these rights and his duties. The relation between the two parties would cease to be one wholly of power and domination on the one hand, and of mere obligation and dependence on the other. If the vassal performed that which he had sworn, nothing more would be required of him. Any attempt of his lord to force him to do anything beyond his obligations was considered as an invasion would now assume the appearance of a mutual compact, imposing corresponding obligations upon both, and making protection as much a duty in the lord as gratitude and service in the vassal. Other important changes would follow this fundamental change, or would take place while it was advancing to completion. After the fief had come to be generally held for life, the next step would be for the eldest son usually to succeed his father. His right so to succeed would next be established by usages. At a later stage fiefs became descendent in the collateral as well as in the direct line. At a still later, they became inheritable by females as well as by males. At this stage the fiefs were divided into two classes, the dates at which these several changes took place. Some writers conceive that fiefs first became hereditary in France under Charles le Magnifique; others, however, with whom Mr. Hallam agrees, maintain that there were hereditary fiefs under the first race of French kings. It is supposed that they had been till the time of the first Capets in the end of the tenth century that the right of the son to succeed the father was established by law in France. Conrad II., surmounted the Salic, who became emperor in 1024, is generally believed to have established the hereditary character of fiefs in Germany.

Throughout the whole of this progressive development of the system, however, the original nature of the fief was never forgotten. The ultimate property was still held to be in the lord; and that fact was very distinctly signified, not only by the expressive language of forms and symbols, but by certain liabilities of the tenure that gave still sharper intimation of its true character. Even after fiefs became descendent to heirs in the most comprehensive sense, and the right of the son to succeed in the estate was settled, there was still to make solemn acknowledgment of his vassalage, and thus to obtain, as it were, a renewal of the grant from the lord. He became bound to discharge all services and other dues as fully as the first grantee had been. Above all, in certain cases the title was transmitted. If he be detainted, excommunicated, or deceased, the vassal, the lord, and the estate would still return by forfeiture or escheat to the lord, as to its original owner.

Originally fiefs were granted only by sovereign princes; but after the description, by acquiring the ordinary quality, came to be considered as property to all practical intents and purposes, their holders proceeded, on the strength of this completeness of possession, themselves to assume the character and to exercise the rights of lords, in fact and in law, much as they had been in the old days. The holiest of vassal, as it were, the alienation of portions of their fiefs to other parties, who thereupon were placed in the same or a similar relation to them as that in which they stood to the prince. The vassal of the prince became the lord over other vassals; in this latter capacity he was called either a mesne or intermediate lord; he was a lord and a vassal at the same time. In the same manner the vassal of a mesne lord might become al of the lord of other arreare vassals, as those vassals that held of a mesne lord were designated. This process sometimes extended in such degree as to make the slightest vassal in the sight of law and of creditors the equal of the mightiest of the old feudal lords.

From whatever cause it may have happened (which is matter of dispute), in all the continental provinces of the Germanic nations, many lands were from the first held, not as fiefs, that is, with the ownership in one party and the usufruct in another, but as alodias, that is, in full and entire ownership. [ALLODIA] The holder of such an alod had nothing, not even free from all the exactions and burdens which were incidental to the vassalage of the holder of a fief. He was also, however, without the powerful protection which the latter enjoyed; and so important was this protection in the turbulent state of society under the old fiefs, that the fiefs of the empire of Charlemagne, that is in fact most of the alodialists in course of time exchanged their originally independent condition for the security and subjection of that of the feudatory. During the tenth and eleventh centuries, says Mr. Hallam, it appears that alodial lands in France had chiefly become feudal; that is, they had been surrendered by their proprietors, and received back again upon the feudal conditions; or, more frequently perhaps the owner had been compelled to acknowledge himself the vassal of his overlord, and thus to assume an original grant which had never existed. Changes of the same nature, though not perhaps so extensive or so distinctly to be traced, took place in Italy and Germany. Yet it would be inaccurate to assert that the prevalence of the feudal system has been unlimited; in a great part of France alodial tenures always subsisted, and many estates in the empire were of the same description.
After the conquest of England by the Normans, the dominium directum, or property of all the land in the kingdom, appears to have been considered as vested in the crown. All the lands and tenements in England in the hands of subjects, says Coke, are held mediate or immediate of the king; whereas in the law of England we read not of the possession of the crown. The tenure therefore may be regarded as the first respect in which the system of feudalism established in England differed from that established in France and other continental countries. There were also various other differences. The conqueror, for instance, held the fiefs at the time unknown on the continent of compelling the arrery vassals, as well as the immediate tenants of the crown, to take the oath of fealty to himself. In other countries a vassal only swore fealty to his immediate lord; in England, he held of or from two lords. There can be no doubt that the oath of fealty taken to an inferior lord should be an express reservation of the vassal's duty to the emperor. But the double oath exacted by the Norman conqueror did not go so far as this. It only gave him at the most a concurrent power with the manor lord over the vassal, and he derived his claims only from the cession of jurisdiction of the royal authority. A more important difference between the English and French feudal system consisted in the greater extension given by the former to the rights of lords generally over their vassals. The warship or guardianship of the tenant during minority, which included both the custody of his person and the appropriation of the profits of the estate, appears to have been enjoyed by the lord in some parts of Germany, but no where, save within the narrow limits of Normandy, did the former exercise it. When a manor in Normandy was sold, or when the Lord, Frederic the Conqueror, had made a grant of the fief, it was his custom, as Mr. Hallam has observed, to retain the stewardship. The stewardship of the crown was peculiar to England and Normandy, and to some parts of Germany. It has been very usual to represent military service as the essential duty of a feudal tenure. But the constituent and distinguishing element of that form of tenure was its being a tenancy merely, and not an ownership; the enjoyment of land for certain services to be performed. In the state of society however in which the feudal system was given, this was requisite that any man holding lands should become the chief duty to which the vassal was bound. It was in such a state of society the most important service which he could render to his lord. It was the species of service which the persons to whom fiefs were given, or of whose grant were seen to be accustomed to render, and the continuance of which accordingly the grant of the fief was chiefly intended to secure. Yet military service, or knight service, as it was called in this country, though the usual, was by no means the necessary or only. In the practice of which any other honourable condition might be imposed which distinctly recognized the dominium directum of the lord. [Knight-Service.]

Another common characteristic of fiefs, which in like manner arose incidentally out of the circumstances of the times in which they originated, was that they usually consisted of land. Land was in those times nearly the only species of wealth that existed; certainly the only form of wealth that had any considerable security or permanence. Yet there are not wanting instances of other things, such as pensions and offices, being granted as fiefs. It was a great question nevertheless among the feudists whether a fief could consist of money, or of any thing else than land; and the judicial authorities were as divided as to that point if it could not. The preference thus shown for land by the spirit of the feudal customs has perhaps left deeper traces both upon the law, the political constitution, and the social habits and feelings of our own and other feudal countries than any other part of the system. We have therefore derived not only the marked distinction (nearly altogether unknown to the civil law) by which our law still discriminates certain amounts of interest in lands and tenements under the name of real property from property of every other nature, but the fixed idea of the former in nearly every respect in which such ascendancy can be upheld either by institutions or by opinion.

The grant of land as a fief, especially when it was a grant from the suzerain, or supreme lord, whether called king or duke, or any other name, was commonly accompanied with an express grant of jurisdiction. Thus every great tenant exercised a jurisdiction civil and criminal over his immediate tenants; he held courts and administered the laws. Frederick the Great's lordship like a sovereign prince. It appears that the same was the case in the system of fiefs granted to the abbots with their lands. The formation of manors in this country appears to have been consequent upon the establishment of feudalism. The existence of manor-courts, and so many small jurisdictions within the kingdom, is one of the most powerful causes of that polity which the Normans stamped upon this country.

In the infancy of the feudal system it is probable that the vassal was considered bound to attend his lord in war for any length of time during which his services might be required. Afterwards when the fief came more independent, the amount of this kind of service was fixed either by law or by usage. In England the whole country was divided into about 60,000 knight's fees; and the tenant of each of these appears to have been obliged to attend the field of battle whenever called upon for the space of a day or more on that occasion on which his lord chose to call upon him. For smaller quantities of land proportionately shorter terms of service were due: at least such is the common statement; although it seems improbable that the individuals composing a feudal army could thus have the privilege of returning home some at one time, some at another. Women were obliged to send their substitutes; and so were the clergy, certain persons holding public offices, and men past the age of sixty, all of whom were exempted from personal service. But the service of these on both as to the duration of the service, and its extent in other respects, varied greatly in different ages and countries.

The other duties of the vassals were rather expressive of the nature of the relation of vassal and service of feudal jurisdiction in which he stood to his lord than services of any great deal upon one. They are thus summed up by Mr. Hallam:—"It was a breach of faith to divulge the lord's counsel, to conceal from him the machinations of others, to injure his person when in fortune, or to violate the sanctity of his honours and the honour of his family. In battle he was bound to follow his king as long as his master was mounted; to adhere to his side while fighting, and to go into captivity as a hostage for him when taken. His attendance was due to the lord's courts, sometimes to weekly courts, and sometimes to bear a part in the administration of justice."

There were however various other substantial advantages derived by the lord. We have already mentioned the rights of warship and of marriage, which were nearly peculiar to the lord. Besides these, there were the payment, called a relief, made by every new enthrone upon the possession of the fief, the escheat of the land to the lord when the tenant died without heir, and its forfeiture to him when the tenant was guilty either of a breach of his oath of homage or of felony. There was besides a fine payable to the lord upon the alienation by the tenant of any part of the estate, if that was at all permitted. Finally, there were the various aids, as they were called, payable by the tenant. These, observes Mr. Hallam, 'depended a great deal upon local custom, and were often extorted unreasonably. Du Cange mentions several as having existed in France; such as an
This settlement of the system however was anything rather than an assurance of its stability and permanency. It was now held together by a principle altogether of a different character, and the old system was quite incorporated, and cemented it. That which had been in the beginning the very life of the relation between the lord and the vassal had now in great part perished. The feeling of gratitude could no more survive than the feeling of dependence on the part of the vassal on his lord. The last, however, was necessarily a necessary supposition, and indeed, and a sense of honour, which in some degree supplied the place of what was lost, were preserved by oaths and ceremonies, and the influence of habit and old opinion; but these were at the best only extraneous causes; such as are necessary for the maintenance of a system. Thus it was the tendency of feudalism to decay and fall to pieces under the necessary development of its own principle.

Other causes called into action by the progress of events conspired to bring about the same result. The very military spirit which was fostered by the feudal institution, and the wars, defensive and aggressive, which they were intended to supply the means of carrying on, led in course of time to the release of the vassal from the chief and most distinguishing of his original obligations, and thereby, it may be said, to the rupture of the strongest bond that had attached him to his lord. The feudal military army was at length found so inconvenient a force that soon after the accession of Henry II. the personal service of vassals was dispensed with, and a pecuniary payment, under the name of quit rents and other supplements, was levied. The vassal was no longer really the defender of his lord; he was no longer what he professed to be in his homage and his oath of fealty; and one effect of the change must have been still farther to wear down what remained of the old impression of the connection between the lord and vassal.

The progress of sub-infeudation has sometimes been represented as having upon the whole tended to weaken and loosen the fabric of feudalism. It 'demolished,' observes the antiquary, 'the entire edifice, took away the ancient simplicity of feuds; and an irrevocable bond was made upon the sovereign, whereby he bound them in a course of time to great varieties and innovations. Feuds began to be bought and sold, and deviations were made from the old fundamental rules of tenure and succession, which had hitherto been so firm and so firm, that no longer sustained when the feud itself was no longer continued to be observed.'

But the practice of sub-infeudation would rather seem to have been calculated to carry out the feudal principle, and to place the whole system on a broader and firmer basis. It would be more correct to ascribe the effects here spoken of to the prohibition against sub-infeudation. The effect of this practice, it is true, was to deprive the lord of his forcible expedients and escheats and the other advantages of his seigniory, and various attempts therefore were at length made to teach, or altogether prevent it, in which the crown and the towns, the barons, and the bishops, were all tempted, may he supposed to have joined. One of the clauses of the great charter of Henry III. (the thirty-second) appears to be intended to restrict sub-infeudation (although the meaning is not quite clear), and it is expressly forbidden by the statute of Quia Emptores, et Quia Hereditamenta. This however was originally the only way in which the holder of a feud could alienate any part of his estate without the consent of his lord; and it therefore now became necessary to provide some other mode of effecting that object, for it was not otherwise possible. The statute of Quia Emptores was therefore allowed so long to go on under the guise of sub-infeudation, to restrain it altogether would he no longer possible. The consequence was, that, as a compensation for the prohibition of sub-infeudation, the old prohibition against alienation was revived, and was to be maintained, and the purchaser or grantee did not hold them of the vendor or grantor, but held them exactly as the grantor did; and such is still the legal effect in Eng-
land when a man parts with his entire interest in his lands. This change was effected by the statute of Quia Emptores with regard to all persons except the immediate tenants of the crown, who were permitted to alienate on paying a fine to the king by the statute 1 Edw. III. c. 12. The value of the land thus descendable, to the spirit of feudalism, and eminently favourable to its conservation and extension, was stopped, another practice, altogether adverse to its fundamental principles, was introduced and established, that of allowing voluntary alienation. As the imaginable, a man's lands liable for his debts, although, after a lapse of near six hundred years since the statute of Acton Burrell, the lands of a debtor are not yet completely subjected to the just demands of his creditors. This statute of Acton Burrell, passed 11 Ed. I. (1293), made the devisable bargages, orburgh tenements, of a debtor saleable in discharge of his debts. By the Statute of Merchant, passed 13 Ed. I. (1286), called Statute 3, a debtor's lands might be delivered to his merchant creditor till his debt was wholly paid. By the Statute of Westminster the Second, passed the same year, a moiety of a debtor's land was subjected to execution for debts recovered by judgment [Eligor1]; and finally, by the several modern statutes of bankruptcy, the whole of a bankrupt's estate, not even the interest of the heir, was subjected to the payment of his debts. Further, by a recent act (3 and 4 Wm. IV. c. 104), all a deceased person's estate in land, of whatever kind, whether he was a trader within the bankrupt laws or not, is liable to the payment of his debts, even with the remainder of his goods and personal estate. An attempt had early been made to restore in part the old restraints upon voluntary alienation by the statute 13 Ed. I. c. 1, entitled 'De Denis Conditionalis,' which had for its object to enable any owner of an estate, by his own device, to dispose of the whole or part of his lands in any manner he pleased. So far as the statute went, it was an effort to strengthen the declining power of feudalism. The effect was to create what were called estates tail, and to free the tenant in tail from many liabilities of his ancestor to which he would be subject if he were seized of the same lands in fee-simple. [ESTATE.] The power which was thus conferred upon landlords of preventing the alienation of their lands remained in full force for nearly two centuries, till at last, in the reign of Edward IV., by the decision of the courts (a. 1471), the power of the landlord in the alienation of his property was completely established. [RECOVERY, COMMON.] The practice of conveying estates by fine, which was of great antiquity in England, and the origin of which is by some referred to the time of Stephen or Henry II., was regulated by the statute of 12 Hen. VIII. (1516). By this statute, the heir of the late tenant in tail was enabled to make alienation of the estate, and the alienation was completely established. [RECOVERY, COMMON.] The practice of conveying estates by fine, which was of great antiquity in England, and the origin of which is by some referred to the time of Stephen or Henry II., was regulated by the statute of 12 Hen. VIII. (1516). By this statute, the heir of the late tenant in tail was enabled to make alienation of the estate, and the alienation was completely established. [RECOVERY, COMMON.] The practice of conveying estates by fine, which was of great antiquity in England, and the origin of which is by some referred to the time of Stephen or Henry II., was regulated by the statute of 12 Hen. VIII. (1516). By this statute, the heir of the late tenant in tail was enabled to make alienation of the estate, and the alienation was completely established. [RECOVERY, COMMON.] The practice of conveying estates by fine, which was of great antiquity in England, and the origin of which is by some referred to the time of Stephen or Henry II., was regulated by the statute of 12 Hen. VIII. (1516). By this statute, the heir of the late tenant in tail was enabled to make alienation of the estate, and the alienation was completely established. [RECOVERY, COMMON.] 

Notwithstanding these successive assaults upon certain parts of the antient feudalism, the main body of the edifice still remained almost entire. It is said that the subject of the abolition of military tenures was brought before the parliament in the 18th of James I., on the king's recommendation, but at that time nothing was done in the matter. When the civil war broke out in 1641, the chancellorship of the exchequer, a sort of old feudal prerogatives of the crown, were for some time still collected by the parliament, as they had formerly been by the king. The fabric of the feudal system in England however was eventually shattered by the storm of the Great Civil War. The statutes of several of the tenures were repealed from 1645. The restoration of the king could not restore what had thus been in practice swept away. By the above-mentioned statute, 12 Car. II. c. 24, it was accordingly enacted that from the year 1645 the Court of Wardens and Liveries, the Court of Tenures by fine, and the Court for or of forfeitures, marriage, &c., by reason of any tenures of the king's majesty, or of any other by knights' tenures, were taken away and discharged, together with all fines for alienations, tenure by homage, escutage, aids pur file and pur fair fitz chevalier, &c.; and that all tenures of any honours, manors, lands, tenements or hereditaments, or any estate of inheritance at the common law, held either of the king or of any other person or persons, bodies politic or corporate, were turned into free and common socage, to all intents and purposes. By this statute every father was empowered by deed or will, executed in the presence of two witnesses, to appoint persons to have the guardianship of his infant and unmarried children, and to have the custody and management of their property. It was therefore impossible that the prac-
under a course of study more laborious and extensive than is consistent with purity and strictly legal. Still a general notion may be acquired of their leading characteristics, by referring to several of the articles already quoted, and to such leads as Attaiander, Baron, Copley, Courts, Duties, Estates, Lease, Manor, Tenures, and such others as are referred to in the summary mentioned.

The notions of loyalty, of honour, of nobility, and of the importance, socially and politically, of landed over other property, are the most striking of the feelings which may be considered to have taken their birth from the feudal system. This is the tendency to the universality of the commercial and manufacturing spirit, which has been the great moving power of the world since the decline of strict feudalism; but that power has not yet been able to destroy, or perhaps even very materially to weaken the opinions which were rooted in the feudal system.

We are not however to pass judgment upon feudalism, as the originating and shaping principle of a particular form into which human society has run, simply according to our estimate of the value of these its relics at the present day. Nor can we give a correct estimate of the state of society during the actual prevalence of the feudal system, it was without doubt in many respects exceedingly defective and barbarous. But the system, with all its imperfections, still combined the two essential qualities of being both a system of stability and a system of progress. It served not only to preserve the order of society, but to promote its development. Notwithstanding all its rudeness, it was, what every right system of polity is, at once conservative and productive. And perhaps it is to be most fairly appreciated by being recalled, not in what it actually was, but in what it preserved from what was corrupted and undermined it.

The earliest published compilation of feudal law was a collection of rules and opinions supposed to have been made by two lawyers of Limbourg, Oferius and Gerhardus Nisius, who were known to, or rather from, Barorosa. It appeared at Milan about the year 1740, and immediately became the great textbook of the branch of the law in all the schools and universities, and even a sort of authority in the courts. It is divided into seven editions, in three others in five books. It has been translated into many languages, and the 64 writers however are wont to quote it simply as Cura Taurorum, the old custom of the different provinces of France. The laws of the Visgoths, of the Burgundians, the Salic law, the laws of the Allemanni, of the Bavarians, of the Ripuarii, of the Saxons, of the Anglii, of the Werni, of the Frisians, of the Franks, &c. have been published by Lindenhoven in his Codex Legum Antiquarum, fol. Franco. 1613. The best editions of the compilations are that by Baluze in 2 vols., fol. Paris, 1677, and that by Chinard, of which, however, we believe only the two first volumes have appeared, Paris, 1755. Another is a 'Averil and Consulrii,' 4 vols., fol. Paris, 1724, is a complete collection of the Continental, all of which however have also been republished separately. All these old laws and codes, as well as the Milan text-book, have been made the subject of voluminous commentaries.

FEUERBACH, PAUL JOHANN ANSEM, the most celebrated German writer on criminal law, was born at Frankfurt on the Main, May 14th, 1772. After having studied at Jena, he gave lectures there on law in 1798, and became successively professor at the universities of Göttingen, Jena, Kiel, and Leipsic. While he was a lecturer at Jena he published his 'Anti-Hobbes, or the Limits of Civil Power, and on the compulsory Right of Subjects against the Foreign,' Anti-Hobbes über die Grenzen der hertzoglichen Gewalt, mit besonderer Rücksicht auf Antwurtscher' (then obiter), and a number of essays inserted in the 'Magazine of Criminal Jurisprudence.' But the work which established his fame was his 'Review of the fundamental Principles and Fundamental Ideas of Penal Law,' which appeared shortly afterwards. His 'Critique of the project of a Penal Law for Bavaria,' published in 1804, is another remarkable work. These purely theoretical essays exercised a very considerable influence on the criminal legislation of that nation, and were afterwards carried into effect. His 'Defence of the late Sir John Scott,' was a very remarkable work. The principles previously promulgated by Feuerbach were all incorporated in this project, which is characterised by logical connection, strict definitions, complete development of the principle of penal law, and cautious and circumspect investigation of the particulars and conditions, and precise determination of penalties. His conclusions were immense, for previously to its publication criminal jurisprudence in Germany was most debatable. Its excellence both in substance and form was such, that it was adopted as the basis of similar attempts at a reform of criminal law by other portions of Germany and Switzerland. Saxony, Wittenberg, Hanover, Oldenburg and Weiner, and the cantons Zürich, St. Gall, Basle and the Grisons modified their codes in accordance with it. In 1817 Feuerbach published a 'Project of a Code to complete the Code Napoleon in the wants of Bavaria; the result of his labour however was not adopted.—That criminal law has become a science, and that this science has had a great influence on legislation all over the continent, it is impossible to overlook. It has been an epoch which had been harsh and bloody because humane: liberty of action was substituted for previous restraint, and the additions were pointed out under which the state ought to interfere by penalties with the rights of the citizens. The former code was adopted and the latter, the more deep-rooted and vague notions gave way to the inflexible but necessary bonds of law. If, on the one hand, it must be admitted that Feuerbach, by his philosophical inquiries and liberal conceptions, powerfully influenced the result, on the other hand, it must be regretted, that by his subsequent publications, 'Considerations on the Jury,' he has promulgated singular opinions on the spirit and efficacy of that institution. The leading idea of his work consists in the proposition that the verdict of the jury is not to be considered as the legal evidence of crime. After having been assailed by a number of eminent writers, and in particular by Gronow, Feuerbach modified his opinions on the jury in 1821, during a visit to France, Belgium, and the Rhení-n-provinces, on a subject in which the French were considered the chief legal institutions of those countries. On his return he published the result of his inquiries in his 'Reflections on the judicial Organization and Proceedings in France,' a work remarkable for the sagacity with which he lays open the defects of the French, and introduces improvements of a very eminent nature. A very able part of that work is the comparison of the French and English juries, which is entirely in favour of the latter, as, according to Feuerbach's opinion, the principles of that institution are completely preserved, while in the English system they have been lost in the rule of law. He is considered the most extraordinary opponent of the French, and is considered the most extraordinary opponent of the French. The French juries by calling them the twelve commissioners of government, and the English by saying that the jury is a tribunal of the people, and have altered his opinion on the jury generally, and although by his remarks on the English jury in particular he seems to have made amends for his former animosity against it, he still will not hastily condemn any tribunal against that institution, on account of its being brought with too many democratical principles. This tendency of Feuerbach's opinion had a very unfavourable influence on the Bavarian government when the introduction of that institution came under consideration, and ultimately it was the result of the jury not being granted to the country. This circumstance made it appear that although a liberal legislator he was by no means in favour of democracy. In 1817 he was made second president of the court of appeal at Bamberg, and in 1821 he was appointed first president of the court of appeal at Anspach; to these functions his sphere of action was latterly entirely confined, with the exception of opinions given in important
The following passages of that book seem to implicate a reigning family of the south of Germany. Those passages are:—

1. 'That the sentiment of justice is strong in the arm of justice.'
2. 'Those spheres are defined as golden castles, the entrance of which is guarded by giants who do not allow a ray of light to penetrate.'

A rumour prevails that his sudden death at Frankfurt, in May, 1833, is not connected with the mysterious affair, of which appears to have been lifted by him. His connection with the Bavarian government became in later years very disagreeable in consequence of his decided opposition to its illiberal policy. Feuerbach was a man of polite acquirements as well as of professional eminence. The elegant dictation of his productions has powerfully contributed to improve the style of recent German writers on law. In this respect his Exposition of remarkable Criminal Cases, founded upon documents, merits particular mention. Previously to Feuerbach's time all similar essays were busy and uninteresting, in consequence of all the documents being accumulated in their original uncoined form, without order or regard to the really interesting features of the case, namely the development of psychological consi- derations. That work, written with true poetical talent, is a remarkable specimen of investigation into the human heart, and in still more striking by the most delicate and hu- man wisdom, must be felt to be a perfect model of exhaustive inquiry and a book of morals. In bold and vivid language he has promulgated the doctrine that it is impossible perfectly to harmonize the inflexible universality of law with individual culpability, and that it is therefore necessary in particular cases to modify and soften the sentence of the law by the preroga-
tive of the sovereign.

FEVER. CONTINUED.

It has already stated that febrile diseases are divided into three great classes, according to the persistence or non-persistence of the morbid phenomena. (Aeus.) Of these classes the first includes the Fevers called Intermittent, in which the morbid phenomena, after having continued a certain time, disappear, but after an interval of a certain duration again resume the progress of the disease, to recur many times. In the second class the febrile pheno-
mena do not wholly disappear, but merely diminish in violence; do not intermit, but remit: these constitute Re-
mittent Fevers. In the third, intermission or remission of the febrile state, but a constant and uninterrupted progression of the disease to a certain termination; fevers in which the phenomena are thus uninterrupted and continuous, constitute the class of Continued Fevers.

Since the concurrence and succession of phenomena which constitute a paroxysm of intermittent fever, or an attack of ague, afford a paradigm, or example, of the febrile state in general, of course the individual phenomena which take place in an attack of continued fever must be essen-
tially the same as those which have been already described under Aeus. There are however some modifications which require attention.

We may take, for the convenience of describing the con-
ditions of the phenomena, in the state of continued fever for the ordinary continued fever of this country, the disease denom-
inated Common Continued Fever (Synochus Mitior). The phenomena which take place in this disease, and the order in which they succeed each other, are the following:

1. A perfect arrest of the functions of the nervous system. There is reason to believe that this derangement takes place primarily in the organic system of nerves, that system which precedes over the nutrition of the organs, and consequently that the very first effect of the noxious agent, whatever it be, which produces fever, is to disorder the health of the organs, and thereby to impair their energy.

Though it is probable that a disorder of the organic nerves is the first event that actually takes place in fever, yet the first event of which we become conscious would seem to be a derangement in the second portion of the nervous system, the great nervous centres in which sensation, intellectual operation, and voluntary motion, have their seat, namely the spinal cord. The organic functions being carried on without conscious, we can know that they are disordered only by their producing dis-
turbance in some part of the sentient system. The organic portion of the nervous system is most intimately connected with, and any disturbance of it is quickly extended to the latter. In an attack of fever, the disordered condition of the brain is indicated by a loss of mental energy. But this loss of mental energy, though it is probably the very first indication of fever of which any one can be conscious, is not no measure of its importance, for which usually attracts attention. In general the loss of mental power is not observed until it becomes distressing, which does not often happen until the progress of the disease is further advanced. The loss of mental power is indicated by the inability to think of cold ideas, and to attend closely to their relation; whence result indistinctness and confusion of mind, and the want of capacity to form a sound judgment.

As this state of the mind depends on the disordered condition of the organ in which the mind has its seat, the brain, and as the servant of the mind, volition, has its seat in the same portion of the nervous system: closely connected with this mental weakness, is the loss of energy in the muscles of voluntary motion. Lasitude is the result.

The movements of the body are feeble and unsteady, as the energy of the mind is impaired.

From this morbid condition of the brain and of the muscles of voluntary motion, there results an uneasy sen-
sation, of which no idea can be conveyed by words; it is a distressing than pain; even the mere restlessness which accompanies, and which forms so large a part of it, any one would gladly exchange for intense pain: it is this state which has been appropriately and expressively named "Fibrille Uneasiness." But very soon there is superadded to this uneasy sen-
sation positive pain. In general pain is first felt in the back and loins, and in the limbs. It is rare that this symptom is absent in the commencement of this form of fever, and it often occasions more distress to the patient than anything else during the first stage of the disease.

The remaining part of the history of an attack of common continued fever has been thus given by a physician who has had the most abundant opportunities of witnessing the symptoms and phenomena of this disease,

'Already a remarkable change is commonly visible in the countenance. Its expression is that of dejection; it is often strikingly similar to that of a very weak person suffering from extreme fatigue. The eyes are much sunken down, the features are somewhat slunk; but its general aspect is so peculiar and characteristic, that an experienced eye can distinguish the disease, even at this early period, and without asking a single question. The skin partakes in a remark-
ably degree of the sensations of cold; it is sometimes intolerable, the chilliness is felt even in a heated room, or in a warm bed: hence the sensation of cold, sometimes increasing to shiver-
ing, which has been considered one of the most constant signs of fever. But this feeling of chilliness by no means depends on external temperature; it is a sensation caused, not by the body, nor any failure in the process, whatever it is, by which animal heat is generated: there is only altered sen-
sation, in consequence of derangement in the function of the skin. In this form of fever the chilliness is ever so small, never amounts to shivering; in others there is an attack of well-
marked rigor, and in others, again, there is either no feeling of cold, or it is so slight that it escapes observation.

The phenomenon is clearly referable to derangement of the function of the spinal cord and brain.

There is yet no affection of any other organ obviously or at least much developed. The circulating system, it is true, is just beginning to be affected. The pulse is no longer readable; it is a fur-sense, and this state of health; sometimes it is also quicker; at other times it is slower; now and then it is scarcely changed in frequency, but its action is invariably weaker than in its sound state.

At the same time the respiration is affected in a corresponding degree; it is shorter and quicker than natural; the chest does not expand so freely, and compensation seems to be sought in an additional number of respirations. Oftentimes neither the pulse nor the respiration appears to be affected; the patient remains so perfectly still he can rise and walk across the room, the pulse instantly becomes rapid, and the respiration quickened almost to fainting.

The transition from the affection of the nervous and sensorial to that of the circulating and the respiratory systems is thus clear and striking. Physiology teaches us how closely these systems are connected, and how mutually they are dependant one upon the other, the closest observers and the ablest experimentalists equally confining that they are intimately connected when we least desire the action of which is the least necessary to the other’s performance of its functions. The nervous system being first deranged, it is thus consonant to what we know of the healthy function of the animal economy that the circulating and respiratory systems should follow.

How long the nervous system may continue thus deranged before any other organs are involved, excepting the circulating and the respiratory, to the extent just stated, is uncertain. There can be no doubt that in this mild form of fever, the temperature of the duration of this isolated state of disorder, if we may so express it, is from a few hours to several days. The rapidity or the slowness with which other systems of organs become involved seems to depend very much upon the acuteness of the attack. In general, the more rapid is the onset of the morbid phenomena succeeded each other, and the entire series becomes complete. But this is not, and it is important to bear in mind that it is not invariably the case, for experience teaches us that the severity and danger of the disease are not diminished by the slowness of its approach, that those cases occur which are slow in forming, and which do not form, while eclip-time, that ultimately become truly formidable.

It has been stated that the circulation languishes with the diminished energy in the sensorial faculties, and the heart and other organs of the lymphatic system. After a while the pulse, which was feebler than natural, becomes more rapid, more full, more strong, and generally more quick than in a state of health; and now the skin, which was cold, becomes preternaturally hot. The previous cold consisted for the most part of a dull, altered sensation, there being little or no heat being felt; but the feeling of heat, on the contrary, is the result of an actual increase of temperature: for the heat in the interior of the body, as well as on the surface, rises in some cases several degrees, as is ascertained by the thermometer, in several hours after the disappearance of all fever symptoms. The standard 98° to 10.1°, which is the normal of the human body, will never be exceeded by this thermometer.

With this progressive increase in the affection of the spinal cord and the brain, the derangement in the circulating system is proportionately augmented. The deranged state is invariably altered, both in frequency and character. Generally it rises to 90, sometimes to 100; but in this form of fever it seldom exceeds this number; and occasionally it never rises above 80. The stroke of the pulse is unequal, irregular, and the respirations are more frequent and fuller than natural, though the general air contains less, and does not reach the lungs, with that sensation of sharpness which is characteristic of ordinary inflammation.

Occasionally, however, a degree of sharpness may be perceived in it, and it is not easily compressible.

The thin white fur which already had begun to appear on the tongue progressively increases in extent and thickness. The colour of the fur usually changes as the disease advances, from a dirty white to an ash colour; but in some cases, it is a form of the disease the tongue always remains slight and
never becomes brown. This state of the tongue is almost uniformly accompanied with thirst, but it is never urgent. There is always a loss of appetite. The bowels are generally constipated, and the secretions of the whole alimentary canal are decreased.

Thus we perceive that the progress of the disease consists in increasing mental and corporal weakness; increasing pain in the head, loins, and limbs; increasing heat of skin, acceleration of pulse, and general febrile uneasiness, together with the termination of the diurnal and nocturnal progressive derangement in the functions of secretion and excretion.

The fever in this mild form is now at its height. It remains stationary, or at least with very little change, for an indefinite period, generally two or three days. The progress of affection does not increase beyond what has been described: there are no greater indications of disease in the respiratory organs, and the mucous membranes of the stomach and intestines do not denote any progressive advancement in disease.

In the great majority of patients in whom the symptoms continue thus moderate, the disease disappears about the end of the second week, that is, they are convalescent at that period; but it usually requires eight or ten days longer before they have regained sufficient strength to leave the sick chamber. Sometimes, although there is no greater severity in the symptoms, the disease is more protracted, and the recovery is not complete until the fourth or even the fifth week. Beyond this period it is very rare for this form of fever to continue.

Almost all who are attacked with the malady in this its mildest form recover: but now and then it happens that the symptoms go on with this degree of moderation until about the end of the second week. Then at the period when it is usual for convalescence to take place there is no perceptible improvement; the patients seem even to grow weaker; they lie more prostrate in the bed, and they are seen incapable of moving; still they complain of no pain or uneasiness, and it is not easy to detect any trace of disease in any of the organs. They do not take any nourishment, and ultimately they sink exhausted. In these cases, on examination after death, it is commonly found that disease has been preying on some vital organ, although its presence could not be detected during life; and this termination of the milder type of fever rarely happens except in aged persons whose constitutions have been embayed by previous diseases, or worn out by various causes which depress and exhaust the powers of life.

With an occasional exception of this kind, the disease in this form disappears in all the cases either by the operation of returning health is remarkably uniform: it is almost always marked by longer and more tranquil sleep. Instead of that restlessness which is so characteristic of fever, and which forms the most distressing part of it, the patient remains dreamless and almost insensible till the first time from an undisturbed slumber, he often spontaneously says that he feels better. Better he may feel, for his febrile uneasiness is gone; the lead that oppressed him is shaken off; he is a new being. The pain of the head and of the limbs is so much diminished, that often he cannot express his thankfulness at the change. The constipation becomes more animated; its natural expression returns; the tongue begins to clean, and after this state of the system has continued for two or three days the appetite returns. The appetite being stimulated, the appetite for nourishment increases, and the pulse usually sinks about ten beats below its highest point at the height of the fever; it is not uncommon however for it to remain quiet during the entire period of convalescence; and for some considerable time it is easily excited on any movement of the body, or any emotion of mind. In some cases, on the contrary, when the attack has been very mild, it sinks considerably below the natural standard, and is intermittent, a sign which has been observed to be attended with a sallow and steady convalescence. In the mean time the temperature fluctuates; the strength gradually improves; and in a short time the patient is restored to his usual health and vigour.

What the condition of the brain and of the organs generally affected is, in these the mildest cases, we do not pretend to say; but we have no opportunity of deciding them, their favourable termination being nearly without exception. But the more all the phenomena are considered in their entire series, in the order of their succession, in the uniformity, nay, even in the exclusiveness of their seat, as well as in the unchanging sameness of their effects, the more clear the evidence will appear of the soundness of the induction, that the condition of all the organs in the cases of fever, in which a transition from convalescence to the sick chamber, is nearly the same: that is, as if in two cases of any type perfectly the same either in the degree of the affection or in the stage of the morbid process which it excites. If this induction be really just, we must conceive that, in the Synochus Mitior, while the morbid state of the system is maintained, the chief symptoms in which it sets up in them stops before it produces any change in their structure.

The transition of a mild case of fever into a severe one, or the progress of a case severe from the commencement, is in great measure dependent upon certain changes that take place in certain organs. These changes occur with great regularity; the organs in which they take place are always the same; and the symptoms by which they are denoted are uniform. The organs affected are the spinal cord, the brain, the membranes of both, the mucous membrane of the lungs, and the mucous membranes of the intestines. Other organs become affected in the progress of the malady, but these are the organs which in a greater or less degree are invariably diseased, and which therefore must be considered as the true seats of the structural changes that take place in the regular course of fever. Accordingly in all the severer cases, the symptoms, which are only the external indications and expressions of the successive changes that take place in the internal organs, have their seat either in the head, in the abdomen, or in the chest.

The progress of the fever is generally seen in the blood; it cannot be a question that a morbid change takes place in the blood at a very early period of fever; that that change is different at different stages of the disease; that it is essentially different according to the particular type of fever, and that it is always great in proportion to the severity of the attack. Without entering here into the controversy whether the very first event in the series is a morbid change in the blood, it is manifest that this fluid cannot but become diseased in the progress of fever, because with the diseased state of the whole system, the blood is affected, and consequently matters which it is the office of these depurating organs to remove from the circulating mass accumulate in it. Moreover, there is evidence that the constitution of the blood itself undergoes changes; that the nutritive, the deprecatory, and the essential constituents are subverted. Of course, in a state of the system in which the most important secreting organs are diseased, and in which the fluid that affords the common materials from which the secretions are elaborated is also diseased, the secretions themselves must necessarily become vitiated.

Fever then is a malady in which disease is simultaneously established in the most important organs both of the organo and of the animal life, in the vital fluid which nourishes and maintains the system, in the blood, in which the purity of the blood is preserved, and in the secreting processes by which all the different tissues and structures of the body are formed. That it should be always a dangerous disease is therefore not wonderful, but the real extent in which it is the instrument of death is generally known. Taking together the whole class of febrile diseases, and including the ravages committed by them at all sessions and in all parts of the globe, it is estimated that of the deaths that take place in the human race one half is always produced by the malady.

No age seems to be actually exempt from fever, but it has been clearly shown that there are particular periods of life when the human constitution is peculiarly susceptible to the disease. Thus from facts obtained from the records of the London Fever Hospital, it appears that in the year 1825, out of 588 patients, there were attacked under 10 years of age 42, under 15 years of age 67, under 20 years of age 172, under 25 years of age 135, under 30 years of age
81, under 33 years of age 29, under 40 years of age 28, under 50 years of age 10, while from the age of 55 to 85, the number attacked varies from 1 to 2. In the year 1826, out of 676 patients there were attacked under 10 years of age 27, under 15 years of age 87, under 20 years of age 170, under 25 years of age 144, under 30 years of age 192, under 35 years of age 46, under 40 years of age 37, under 45 years of age 28, under 50 years of age 13, while from the ages of 55 to 85 the largest number attacked at any period does not exceed 5. In the year 1827, out of exactly the same number of patients, 676, there were attacked under 10 years of age 25, under 15 years of age 70, under 20 years of age 163, under 25 years of age 164, under 30 years of age 107, under 35 years of age 35, under 40 years of age 56, under 45 years of age 20, under 50 years of age 13, while from the ages of 55 to 85 the number attacked was 46. It appears, then, that the effluvia which arise from this immense quantity of putrefying animal substance, combined with so much heat and moisture, continually generate the plague in its most intense form; and that the Egyptians of old were so sensible of this putrefaction of dead animals contributed towards breeding the plague, that they worshipped the dead Isis for the services it did in devouring great numbers of serpents, which, they observed, injured by their bite when alive.

Thus the risk of life from this malady is twice as great at the age of 31 as it is at 11. It is also nearly twice as great at 41 as it is at 21. It is five times as great at 61 as it is at 11. In 1826—male, 46; female 249. In 1827—male, 28; female 339. While the male is the more susceptible to the disease, she appears to be capable of resisting it better than the male. Thus, in 1825, out of the total number of deaths, 194, there died—males 33; females 39. In 1826, out of the total number of deaths, 65, there died—males 36; females 29. In 1827, out of the total number of deaths, 86, there died—males 48; females 38.

The causes of continued fever are ascertained with tolerable exactness. The exciting cause of continued fever is precisely the same as that of intermittent fever, and of ague, of which account has been already given. (Acute.) What modifications of the poison, or of the constitution, cause the same noxious agent to produce at one time ague, at another typhus, at a third time fever, at another plague, and at another scarlatina or tooth-ache, are not yet well established; but there is reason to believe that intermittent and remittent fevers are dependent chiefly on a vegetable poison, while, on the other hand, continued fevers have their source chiefly in a poison of animal origin.

The characteristic poison of animal origin, in a high degree of concentration, would kill instantly; and when not intense enough to strike with instantaneous death, it would produce a continued fever with the typhoid characters in the greatest degree of completeness and perfection. And this appears to afford the true solution of the origin of the plague. The more closely the localities are examined of every situation in which the plague prevails, the more abundantly the sources of putrefying animal matter will appear, and the more manifest it will be that from this putrefaction such matter must be present, but that it must abound.

In assigning the reason why Grand Cairo, in Egypt, is the birth-place and the cradle of the plague, Mead states that this city is crowded with vast numbers of inhabitants who live not only in poverty and wretchedness, but where the streets are narrow and close; that the city itself is situated in a sandy plain, at the foot of a mountain which keeps off the winds that might refresh the air; that consequently the heat is rendered extremely stifling; that a great Canal passes through the midst of the city, which at the overflowing of the tide (the river) is filled with water; that on the decrease of the river this canal is gradually dried up, and the people throw into it all manner of filth, carrion, offal, and soot; that the animals which are attacked by the plague are not removed, but are allowed to die; that the effluvia which arise from this immense quantity of putrefying animal substance, combined with so much heat and moisture, continually generate the plague in its most intense form; and that the Egyptians of old were so sensible of this putrefaction of dead animals contributed towards breeding the plague, that they worshipped the dead Isis for the services it did in devouring great numbers of serpents, which, they observed, injured their bite when alive.

But by far the most potent specific poison derived from an animal origin is that which is formed by exhalations given off from the living bodies of those who are affected with fever, especially when such exhalations are pent up in a confined and unhealthy apartment. The room of a fever patient, in a small isolated apartment, or one very close to the place of an out-break of fever, is perfectly analogous to a stagnant pool in Egypt full of the bodies of dead locusts. The poison generated in both cases is the same, the difference is merely a difference of quantity, which is changed by the place and number of the individuals. For instance, a small fever-patient is not suffered to die in a house, but is carried away to a hospital, and the poison is certainly of animal origin. Whenever wounded soldiers with malignant sores or mortified limbs were crowded together, or whenever only a few of such diseased persons were placed in a room with the sick from other diseases, with those large animals which interceded between them, it is clear that the number is not of such magnitude as to cause any danger to the healthy. And when a number of such persons are confined in a hospital, it is clear that the number is not of such magnitude as to cause any danger to the healthy.

Since the above was written the true nature of these poisonous exhalations has been demonstrated by direct experiment. It has been found that if a quantity of the air in which these exhalations are diffused be collected, the vapour derived from it will be found capable of producing a fatal effect on animals. And it is highly probable that the cold wind would have a similar effect on human beings.
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mately excited, the respiration is accelerated, the heat increased, the perspiration greatly augmented, the muscular power exhausted that the animal lies on the ground, wholly unable to stir or to make the slightest effort, and after a short time it is actually seized with the black vomit, identical in the nature of the matter evacuated with that which is vomited in the usual labour of smallpox, and in the fever. It is possible by varying the intensity and the dose of the poison thus obtained to produce fever of almost any type, endowed with almost any degree of mortal power.

When these facts are connected with the absorbing power of the lungs, as before explained in the account from which the above passage is extracted (2nd vol. of the Philosophy of Health), we can no longer wonder that when the poison is in a high degree of concentration a single inspiration of it should be capable of producing almost instantaneous death; and we are not surprised that the continual inspiration, in the concentrated state, the continual inspiration of it should generate the mortal disease which experience teaches us that it produces. It is impossible to estimate too highly the importance of the isolation and seclusion, the strict and rigid direction in which human industry and skill should be put forth to destroy the great sources of fever, that is, to put an end to that terrible malady by whose sole agency one half of the human race perishes, and whose principal ravages are inflicted by the destruction of the little ones, so dear to the possessor, and most useful to the community.

The treatment of fever, a subject of some difficulty, but of the utmost importance, belongs to the several heads of hygiene, pathology, and the physical faculties, and can almost be ascribed to the survey of all the sciences concerning Patiemental Contagion, and the Methods to be used to Prevent it; Sir John Pringle's Observations on the Nature and Cure of Hospitals and Jayl Fevers, in a Letter to Dr. Mead; and Observations on the Diseases from Army; Chitter, Contagion, Fever, and the Regency of Tripoli, where it borders on the desert, its boundary, of course, is not exactly fixed. On all sides it is surrounded by nomadic nations; on the north and east by the Tinkobs and the Tuaregs; and on the south and west by the Tinkobs and Tuaregs.

Its northern part is traversed by two ridges of stony and sandy mountains, or rather hills; for it seems that their elevation above their base does not exceed 1200 feet. They are parallel; the eastern is the higher of the two; the western they take the name of Ghurian Mountains and Soudah Mountains. The country south of these ridges contains large plains, covered with sand, and without any trees of vegetation; but some ridges of hills from 300 to 400 feet high rise above the sandy and inclosed valleys between them, which are the only parts capable of cultivation. The cultivable portion of the country hardly exceeds one-tenth of its surface, which according to Hornemann extends 300 miles from north to south, and 200 from east to west, its height thread is thus divided into three parts. The lower one, which is the most arid, extends from the sea to the naked eye. Vast numbers of these threads successively uniting, at length form a single thread of sufficient magnitude to be visible, but still smaller than the finest thread of the silk-worm. If the length of these threads be measured, it will be found that their diameters are from 1/1000 of an inch to 1/10000 of an inch; and contrary, their breadth exceed their length, they are termed plates or lamins. By the approximation of these fibres or plates in every possible direction, and by their accumulation, combination, and condensation, is constituted the simplest form of organized matter, the primary tissue called membrane.

Membrane, composed for the most part of fibres, so disposed as to form a net-work, may be said to constitute the basis of the animal body. Into the meshes of this membranous net-work are poured the different kinds of animal matter which constitute the different kinds of animal tissue. Thus nervous matter deposited in the soil is impregnated with saline matter. Some meat, barley, and dours are cultivated, but not enough for the consumption. Goats and ases are reared in great numbers; cows, sheep, horses, and camels are not so numerous. All these animals feed on dates or their kernels.

The principal town, Moustjruk, is surrounded by a wall, which contains about 2000 inhabitants. Towards the northern boundary is Sooudah, with about 4000 inhabitants. Zula, east of Moustjruk, is not so large.

The number of inhabitants is estimated by Hornemann at 76,000 or 75,000. In the northern districts they resemble their neighbours, the Arabs, but in the southern they have rather the features of the Tuareg or Tinobs, who belong to the widely spread nation of the Berbers.

They are all Mohammedans, and commonly use the Arabic language. Their sovereign exercises despotic power, but is not in any degree a despot; he is rather the head of the Tripolitans, to whom he annually sends presents of gold-dust or other trinkets. He receives from his subjects a portion of the produce of the ground, and levies some duties on the merchandise which passes through their territories.

Fezzan is of some importance in a commercial point of view, being the most frequented road by which Soudan communicates with the countries along the Mediterranean. From October to February numerous caravans arrive at Moustjruk from Cairo, Bengazi in Barb, Tripoli, Cadames, Bornau, and the two Fezzans, the Fezzan and Soodan, and the Tuareg and Araps, and Fezzan then visit its market. The traders dispose of part of the produce of their respective countries at Moustjruk, and carry the rest farther on. The industry of the inhabitants is limited to the manufacturing branch of the industry, and is practised by the Tuareg, the Binjaks, and the lower class.

(Hornemann's Journey from Egypt to Fezzan; Denham and Clapperton's Narrative of Travels and Discoveries, &c.)
the interstices of a membranous net-work; muscles are composed of muscular substance deposited in the interstices of a membranous net-work; bones are composed of earthly particles deposited in the interstices of a membranous net-work. The threads of which this membranous net-work is composed consist of fibrous elements laid down when built up into complex structures. Hence, perfectly formed membranes, nerves, muscles, and bones, present a fibrous structure, often visible to the naked eye, and always manifest in the analysis of these organs. The larger fibres of which, for example, are obviously formed, consist of smaller fibres, and these of still smaller fibres, until we come at length to a primitive fibre of extreme minuteness. Professor Ehrenberg states that there are nervous fibres which can only be discerned by the use of 300 diameters, and yet others which can only be brought into view by a magnifying power of 800 diameters; and the primitive muscular fibres are commonly supposed to be still more minute.

But though membranes, muscles, nerves, and bones are composed of fibres, and present a manifestly fibrous structure, yet there is one particular tissue which is called fibrous by way of eminence; a bad name for it certainly, but still it has been so long and so extensively in use among anatomists that it is difficult to change it. The tissue spoken of above, which consists of the bones and cartilages (the periostracum and perichondrium); the membrane that is spread over or that forms a part of certain muscles, constituting the muscular aponyseons or fasciae; the membrane that forms the sheath in which the tendon of the biceps is enclosed; the peritoneum that envelops the brain and spinal cord (the dura mater and its continuation down the spinal canal); the firm membrane in which the more delicate muscles and the humours of the eye are contained (the tunica sclerosa); the outer membrane that contains the part (the pericardium); the membranes by which the bones in general are tied together and the joints in particular are secured, called ligaments; and the firm cords in which many muscles terminate and which form their movable extremities, termed tendons, all these have an appearance so extremely diffuse through the body, and are apparently independent of each other, yet they are closely connected together, and form a peculiar system. The firm and resisting threads which constitute the basis of these different organs are composed of condensed cellular tissue. The peculiar animal substance of which they consist is coagulated albumen and gelatine, intermixed with a small quantity of mucous and saline matter.

All the proper fibrous organs possess, in the language of anatomists, a low organization; that is, they receive less nourishment than the other organs, and their blood-vessels are so minute in size, that they are generally incapable of admitting the red particles of the blood. They receive few nerves, and these are so small that some anatomists have doubted whether they are supplied with any nerves. In certain cases of disease proves that they are not absolutely destitute of sensitive nerves. In like manner, few absorptions can be traced to them; yet the ravages of disease in the neighbourhood of joints, the sloughing of tendons, and the destruction of the peris- toneum by the pressure of the body, abundantly testify that they are supplied with absorbent vessels. But the office of all the fibrous organs is mechanical; they are adapted either to contain, support, and defend more delicate organs, or they are organs of tissue and vessels which are firmly united together. A high degree of organization, great sensibility, great sensibility, would have disqualified them for their office. What they principally need is a power of cohesion sufficient to enable them to resist rupture, and to sustain the opposing shock of the sudden introduction of fluid or water, or the violent movements of the body; the less sensibility they have the better, and accordingly they are so organized that while their physical properties render them by far the strongest parts of the animal frame, they are endowed only with a just degree of sensibility to constitute them important parts of the living system.

(Grainger's General Anatomy: Cyclopaedia of Anatomy and Physiology, 4th ed. : Philosophy of Health, vol. 1.)

FIBRE, VEGETABLE, one of the most elementary forms of structure, which have no separate life of their own but are raished spirally in the interior of a cell or tube. It is uncertain whether the fibre is solid or hollow, its tenacity being such as to baffle all microscopic observers who have yet examined it. It is this elementary fibre which, being turned spirally round a long delicate tube with its spines in contact, forms the elastic spiral vessel. It occurs in the interior of common cells, when its turns cross each other and constitute a system which is called the cellular tissue which forms the lining of an antler, and is known itself to have some connection with the opening of that organ. In its naked state, when uncombined with membrane, it is supposed to be very rare. On the surface of some seeds, as castor beans, the spiral vessels are found in the shape of a grey or white film; in others they form a great abundance, in the form of spiral threads of a thin delicate elastic nature. It is also reported to appear in several minute fungi, but this is a point that requires confirmation.

Vegetable fibre should not be confounded with the woody fibre or wood, which is composed of long straight tubes either single or adhering in bundles. Of these, the thread of hemp, flax, and the like, some account is given elsewhere. [Woody Tissue.]

FIBRIN (coagulable lymph, gluten), an animal pro- marit ended consisting of the parts of the coagulum of the blood which remains after the removal of the red particles [Blood], and forming the basis of muscle. The fibrin of the blood is best obtained by what is called whipping the blood, that is, by rapidly stirring a quantity of fresh drawn blood with a spoon or a piece of stick. During this process the blood becomes clear, the body of the fibrin, or the coagulum, is removed, and the red particles which are mixed with that coagulum may be removed by washing it in large and repeated portions of water; the substance that remains is fibrin.

During the state of life the fibrin is contained in solution in the fluid part of the blood, the liquor sanguinis. Professor Müller obtained fibrin in a state of purity from frog's blood by opening one of its large arteries, or by laying bare the heart itself. This blood being received into a watch-glass and the preparation washed, it was observed that previously to the complete coagulation of the blood there formed a small colourless coagulum clear as water, 'Having brought a drop of pure blood,' says Müller, 'under the microscope, and diluted it with serum, so that the whole was a perfectly colorless and transparent fluid, but separated from each other, I observed that in the interval between the blood-corpuscles a coagulum of previously dissolved matter was produced, by which the whole separated blood globules were connected together. I was then able to remove at that time all fluid matter, and in this manner observing their wide distribution and the size of the intervals between them, by raising with a needle the fibrinous coagulum occupying the intervening spaces. As the blood-corpuscles of the frog are rendered by a microscope uncommonly large, the observation was easily made, and allowed no ambiguity to remain on the subject. There is still however an easier and more convincing me-thod of proving that fibrin is dissolved in frog's blood. As is evident from experiment that the blood-corpuscles of the frog are not dissolved in the former times or after times of mean and mammals, I concluded that perhaps the fibrin would keep them back, while it allowed the corpuscles of men and mammalia to pass. This is the case. The experiment may be made on a small scale with the blood of a frog alone; a small glass needle and a filter of common white filtering-paper or thick printing paper are the only requisites. The paper must previously be moist, and it is well to add an equal quantity of water to the fresh blood of the frog. The liquid which flows through the filter is an almost pure fibrin, which is observed to be of a slight tinge of red, from the coloring matter dissolved by the water. As however the solution of the colouring matter of frog's blood by water requires a considerable time, the filter would therefore are expressed in the liquid, and is sometimes quite colourless. If, instead of water, a solution of sugar in water (one part of sugar to 200 or more of water be employed), no colouring matter will be dissolved during the filtration, and the filtered liquid is quite colourless and the liquid of mixture. If the filtered serum is examined under the microscope, no red corpuscles can be detected. In this clear serum in the course of a few minutes a colourless coagulum is formed, so clear and transparent that it is not even detected after its formation. It is convenient to have a very delicate glass needle with a twist of thread. It gradually thickens and becomes whitish and fibrous; it assumes gradually the appearance of the coagulum of human lymph. In this way the fibrin of the blood is ob-
that in the purest state, and this has not hitherto been done.

Pure fibrin is of a whitish colour, insoluble and insoluble in cold water; it is a solid substance, tough, elastic, and composed of thready fibres.

The relative quantity of fibrin contained in the blood varies with the state of the system as to the time at which it is obtained.

It is stated by Brande, who has given a full account of the chemical properties of fibrin, that fibrin and albumen (Albamin) are very closely allied, and appear rather to differ in organization than in essential chemical character. The ultimate composition of fibrin has been determined by Gay Lussac and Thenard, and by Michaelis, who made a comparative analysis of that of arterial and venous blood: the following are their results:-

**Gay Lussac and Thenard.**

| Nitrogen | 19.834 |
| Carbon | 53.360 |
| Hydrogen | 7.021 |
| Oxygen | 19.685 |

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**Michaelis.**

| Nitrogen | 17.587 |
| Carbon | 17.267 |
| Hydrogen | 23.750 |
| Oxygen | 24.065 |

The mean of these results gives nearly the following atomic composition:

<table>
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<th>Atomic</th>
<th>Equivalents.</th>
<th>Theory.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>14</td>
</tr>
<tr>
<td>Carbon</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Oxygen</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>

That variety of fibrin which constitutes muscular fibre is interwoven with nerves, vessels, and cellular and adipose tissue, its properties are probably always more or less modified by foreign matters. To obtain the fibrin of a muscle, it must be finely minced and washed in repeated portions of water at 60° or 70°, till all colouring and soluble substances are washed out of the fibrin by the repeated evaporation of the water, and is then dried, and becomes white, and insoluble; it is then strongly pressed between rags of linen, which renders it semitransparent and poulteulent. Berzelius observes, that in this state it becomes so strongly electro-positive when triturated, that the particles repel each other and adhere to the mortar, and that it still retains fat, which is separable by alcohol or ether. When long boiled in water, it shrinks, hardens, and yields a portion of gelatine, derived from the intestinal cellular membrane; the fibrin itself is also modified by the continued action of alcohol, and loses its power of replacing in acid the loss by evaporation, ammonia is formed, which combines with the acid, and on saturating it with carbonate of lime, filtering, and evaporating to dryness, a yellow residue remains, consisting of three distinct products: two of these are taken up in the forms of a solid, and the third is soluble. It is insoluble in dilute acetic acid, and precipitated by an excess of muriatic acid, the precipitate being a compound of fibrin with excess of muriatic acid, and which, when washed with distilled water, becomes gelatine and soluble, being reduced to the state of a neutral mixture of fibrin.

When the fibrin of muscle is mixed with its weight of sulphuric acid, it swells and dissolves, and when gently heated, a little fat passes to the surface, and may be separated: if the mass is then diluted with twice its weight of water, and then boiled over a low flame, it loses its power of replacing in acid the loss by evaporation, ammonia is formed, which combines with the acid, and on saturating it with carbonate of lime, filtering, and evaporating to dryness, a yellow residue remains, consisting of three distinct products: two of these are taken up in the forms of a solid, and the third is soluble. It is insoluble in dilute acetic acid, and precipitated by an excess of muriatic acid, the precipitate being a compound of fibrin with excess of muriatic acid, and which, when washed with distilled water, becomes gelatine and soluble, being reduced to the state of a neutral mixture of fibrin.

Subacids of lead, nitrate of mercury, and peroxide of iron. It appears therefore that the products of the action of sulphuric acid upon the fibrin of muscle are, 1. an extractive matter soluble in alcohol; 2. leucine; and 3. extractive, insoluble in alcohol, but soluble in water.

(From Brande, 'Cyclopedia of Anatomy and Physiology in loc., Professor Millet, British Annals of Medicine: Philosophy of Health, vol. 1.)

**FIBULA.** The fibula (pértroch, Fr. tibia; a bōdikin) is a long slender bone swelling out at both ends, by which it is firmly attached to the outer side of the tibia, or main bone of the leg. The lower extremity forms the projection of the outer ankle; it is received into a deep longitudinal groove at the side of the tibia, to which it is connected by a ligamentous union; and it is firmly knit to the foot by strong bands of ligament, which spread like the sticks of a fan from the tip of the bone. It is held to the bones of the foot by ligaments, and is just smaller than the tibia. The upper extremity slants a little backwards, and is articulated with the side of the tibia below the knee, by means of a true joint, having cartilaginous surfaces and a synovial membrane as well as external ligaments. The tension of the biceps fibres causes, or muscle of the outer hamstring, is implanted into this part of the fibula, which is called its head, and spreads over the adjoining bony and muscular surfaces, connecting and supporting them in the double capacity of a ligament and an aponemosis. There is a greater degree of motion between the parts of the fibula than is sufficient to give some elasticity to the play of the ankle-joint, which is secured on the outer side chiefly by the projection of the fibula beyond it. The shaft of the fibula—nearly straight, triangular, hard, a little twisted, and of great strength for its size—is, at the ankle, met with the index, and extends like a bowstring across the arch formed by the gradual enlargement of the tibia towards the knee. A strong sheet of fibrous membrane, called the interosseous membrane, tightly stretched from one bone to the other, fills up the greater part of the interval between the shafts, and gives surface for the attachment of muscles and strength to the limb, without adding inconveniently to its bulk or weight. Nine muscles are attached to the fibula. The biceps fibulae, already mentioned, bends the leg back to the back of the foot, and in the event of the toes the remaining five unite in raising the heel, and press the toes and the ball of the foot against the ground; at the same time turning the sole outwards by lifting its external border. The muscles chiefly concerned in the last-mentioned action are the peroneus longus and brevis; their tendons pass behind the ankle, lying in a groove of the fibula, which acts as a fixed pully to change the line of their traction, and are inserted into two bones on the outer and inner edge of the sole near the base of the toes. They should be well stretched, and when the superficial and spasmatic force, in consequence of the foot coming unexpectedly to the ground, are capable of breaking the fibula above the ankle by pressing the foot against its projecting end. This accident happens not unfrequently from the foot slipping unawares over the edge of the curbstone, and is complicated with various degrees of lateral dislocation, and with severe sprain of the ligaments of the inner ankle. The force may be sufficient to break off the tip of the inner ankle bone (the sharp edge of the broken tibia be driven through the skin, which absorbs the concussion) and the cavity of the joint is exposed, and the injury becomes a compound dislocation of the ankle-joint. These accidents are sometimes secondary, the foot being in the first instance forced by the weight against the inner ankle, with strain of the external ligament of the ankle and a jerk by the peronel. However produced, the injury is a very serious one, and often requires much good management to prevent permanent lameness or even worse consequences. Minor degrees of it are a general subject of the following paragraphs. The fractures of the fibula may be overlooked. It may, however, be easily detected, notwithstanding the swelling, by the unusual position of the foot, and by pressing the bones together higher up the leg; for if the fibula be broken, this cannot be done without a sense of yielding of the otherwise solidly compacted parts, and increase of pain to the patient from the pressure of the broken end of the bone against the soft parts. From the name of the eminent surgeon who first delineated and described this injury, it is called Put's fracture. (Poor; Fracrum; Tibia.)

**FIBULA.** A term used among the Romans for the
branch or buckle with which their vest were usually fastened. It is derived from fico, 'to fix,' and the most ancient form of the word is supposed to have been *fijbula.* These fastenings were made in very great variety, both as to material and form, and were sometimes ornamented with engraved stones or gems. Fibula of gold were often used as precents. The most common were made of brass or iron. Count Caylus, in his *Recueil,* p. 116, fig. 4, has engraved a fibula from a crimson clay pot, which was discovered in the garnet, the garment and a key. *Fijbula* was a term likewise applied by the ancients to the iron brace or band used for joining or fastening beams, mentioned by Cæsar (De Bello Gall., l. iv, c. 17) and described by Vitruvius (l. i, c. 5). The *fibulae aequanae* was an instrument used by surgeons for drawing the lips of a wound together, noticed by Priscus, in his *Liberon,* p. 778, who also mentions the *fibula gymnasiae,* *sive Theatrae,* 'que cantoribus et comedias insereret,* particularly described by Cæsar, and several times alluded to as civil and Martial. This was a ring of wrought inscription.

**FIBULA:RIA.** [ECHIDNE, vol. ix pp. 260, 261.]

**FICEDULA.** [RESCUIN, vol. iv. p. 125; VITRITIDE.]

**FICHTE, JOHANN GOTTLIEB,** was born in Upper Lusatia in 1751. After receiving a school education, he studied at the universities of Jena, Leipzig, and Wittenberg. He afterwards became acquainted with Kant and Pestalozzi; and in 1792 attracted general attention by his *Versuch einer Wirklichkeits- und Freiheitsbegrundung* (Articles on the Natural and Political History of Man). Critical reflections on all Religion, on account of which he was made professor of philosophy at Jena. Here he began to propagate the system of philosophy which is known under the name of *Wissenschaftslehre* (*Doctrinea Science*). A treatise on Faith and Providence which he then wrote at Jena, and which was afterwards published under the title of *Religion* under the influence of irreligion, he retired to Prussia, and after living for some time at Berlin, removed to Erlangen, where he was appointed professor of philosophy, with leave to visit Prussia in the winter time.

The character of Fichte has always been held in high esteem. His *Discourses to the German People* during the French invasion are justly valued, and he is said to have died, as he always lived, for a good cause. During his residence at Berlin in the year 1814, he urged his wife to visit the sick, and the moral of this action is a frequent one, which she caught a faver, from which she recovered, and communicated it to her husband. Fichte died at Berlin in 1814, leaving a son, Immanuel Hermann, now a professor at Bonn, and one of the most distinguished philosophers in Germany.

Fichte's *Wissenschaftslehre* grew out of the philosophy of Kant, of whom he at first considered himself a mere disciple. Kant had dogmatically assumed the school logic as the foundation of his system; the forms of propositions, as all-inclusive categories, had support of categories, and he never thought that any one would ask for the origin of these forms themselves. According to the system of Kant, time and space have no existence exterior to the mind, but are merely the forms in which it discurs over objects, and which must exist in itself. An intuition (art in complete contemplation) was divided into matter and form; thus in a red surface, the mere colour red was called the matter of the intuition, and the extension its form. The first was held to be a manifestation of something external to oneself, the second a manner of change in the mind. This was Kant's theory of sensation (Transcendental Ästhetik) and it is followed by an investigation of the laws of the understanding. These laws he worked out from the table of categories, which, as before said, was constructed from the division of the forms of propositions into universal, particular, and singular. Hence the objects of propositions considered in this light, are 'all,' 'many,' or 'one,' may be said to come under the categories of 'totality,' 'multiplicity,' and 'unity.' In the division of the categories from the division of the forms of propositions, Kant got the categories of 'reality,' 'negation,' and 'limitation,' and from the division into categories, hypothetical, and disjunctive, the categories of substance and accident—cause and effect—action and re-action. A fourth series of categories obtained from the modal division are 'necessity,' 'actuality,' 'possibility;' and as we cannot think of objects at all except under the forms expressed by these propositions, it follows that all objects of thought must come under the categories.

From this Kant concludes, that as time and space are the

forms of our intuition, so are 'cause and effect,' i.e. the forms of our thought, having likewise no existence without our own minds; and that when we say the law of cause and effect is a law of nature, we are compelled to observe, having nothing to do with external things themselves. Kant compares his own system to that of Copernicus, observing that the latter makes the sun the centre of the world, whereas the former puts the mind in the centre, and makes the object adapt themselves to the forms of the mind, instead of the mind following the laws of the objects. Hence, according to his view, we are altogether without knowledge of things themselves, the existence and being merely in our own mind, and likewise the laws by which we suppose they are regulated. We merely contemplate various phenomena, which are the exponents of things we cannot know anything about, and to which these very phenomena do not belong at all.

Various contemporaries had found it strange that two regions so heterogeneous as those of mind and things in themselves (das nur an sich) should at the same time be adumbrably adapted to each other, that the latter should be given to itself to apprehend forms of the former, and at the same time, the taking of a common book of logic, assuming all its dicta as self-evident axioms, seemed rather a superficial proceeding. The sceptical adversaries of Schelling and Fichte thought that there was no connection between the form and the matter of knowledge.

Aroused by these attacks, Fichte, as a disciple of Kant, began to inquire what was the absolute form of knowledge, and at the same time what lay at the foundation of logic, the metaphysical foundation of which, they apprehended, did not satisfy him. He saw that all logic depends on the oppositions of identity and contradiction. *A is A,* and *Non-A is not A.* He then asked himself what is meant by *A is A,* or does it imply that *A exists?* No, because the proposition *A is A* cannot be a proposition of itself, it is not a statement of fact, because it does not exist at all. *A is A* means no more than *If A is given, it is A,* and *A is not A,* provided it is not given. *Given* implies *given to some conscious being,* and hence we find that the truth even of an identical proposition depends on the being of the thing referred to. The conversion of *A is A* into *Ego is Ego,* and this is found to depend on no condition, as Ego gives itself, and its very essence consists in its giving itself. From this proposition is obtained the category of reality: reality is that which is given to itself to apprehend forms of the former, and from this proposition is obtained the category of negation. Then a question arises, *How can Ego post Non-Ego?* It is assumed as an axiom that everything in Ego is postulated by itself, that is, the self-destruction of Ego is impossible. It then turns out that Ego postulates something, as determined by Non-Ego. An undetermined being is nothing; determination implies limitation, and hence Ego, by postulating itself as a determined being, at the same time postulates Ego itself. An intuition (art of complete contemplation) is divided into matter and form; thus in a red surface, the mere colour red was called the matter of the intuition, and the extension its form. The first was held to be a manifestation of something external to oneself, the second a manner of change in the mind. This was Kant's theory of sensation (Transcendental Ästhetik) and it is followed by an investigation of the laws of the understanding. These laws he worked out from the table of categories, which, as before said, was constructed from the division of the forms of propositions into universal, particular, and singular. Hence the objects of propositions considered in this light, are 'all,' 'many,' or 'one,' may be said to come under the categories of 'totality,' 'multiplicity,' and 'unity.' In the division of the categories from the division of the forms of propositions, Kant got the categories of 'reality,' 'negation,' and 'limitation,' and from the division into categories, hypothetical, and disjunctive, the categories of substance and accident—cause and effect—action and re-action. A fourth series of categories obtained from the modal division are 'necessity,' 'actuality,' 'possibility;' and as we cannot think of objects at all except under the forms expressed by these propositions, it follows that all objects of thought must come under the categories. From this Kant concludes, that as time and space are the
that he (Fichte) thought he had constructed the whole universe. These objections are answered by his son, in an excellent little book entitled 

Dichterische Naturphilosophie, in which he shows that the very being of the Ego proves its own finiteness, and that consequently his father's doctrine necessarily leads to the assumption of an absolutely infinite and unmeasurable reality, which is the true condition of all matter and energy. In a tract called Die Wissenschaftsliteratur, in ihrem allgemeinen Umriß dargestellt (Berlin, 1818), the elder Fichte says plainly that God is the only true being; and this banishes all suspicion of Atheism. His moral doctrines involve a conflict for nature, which he regards as a mere curb over which freedom should triumph; and hence he is averse to all speculative physics, considering nature as the absolutely given of which there can be no knowledge, and making all reality proceed from the knower, he denies reality to the object. This is the characteristic of the Schellingian philosophy, and its mere name (Natur-Philosophen) to accuse him of one-sidedness. His son attributes this tendency to the influence of the doctrines of Kant, which always treated nature as a mere appearance (Erscheinungen), and from which Fichte never recovered.

It is hardly to be expected that the Wissenschaftsliteratur will be rendered perfectly intelligible by the above short notice, when the reader might turn over the whole works of Fichte, and still find the subject intensely difficult and obscure. The article has been to give a hint of the principle, and no more.

An opportunity is here taken of warning the English reader against mere dabbling in German philosophy. If he be not content to imbibe it through the medium of others, it is to be feared that he will obtain in it a considerable portion of his time, and will not refuse to bow to it on the most painful attention, he will find it worth his labour to study the works of Fichte, Schelling, and Hegel. But if he cannot bestow this labour, let him refrain from the subject altogether. The doctrines of the German philosophers are only to be gathered from their own voluminous works, most of which are written in a hard-crabbed style; and all the English books which would give a slight view of this philosophy, and a pretty essay on it, are worse than useless. They are the works of monks and miracles.

FICTELGEBIRGE is a mountain-knot or mountain-mass in Germany, situated between 50° and 50° 15' N. lat., and 11° 45' and 12° E. long. Its greatest length from north-east to south-west, between the towns of Asch and Reuthe, does not exceed thirty-five miles; and its average width is about twenty-eight miles. It is calculated that this mass of rocks covers about 900 square miles. The whole mountain-mass is furrowed on all sides by narrow valleys and gapes; its most elevated parts extend in a north-easterly direction; and an extensive plain intervenes. These summits form a series arranged along the axis of the mass from south-west to north-east. Those which attain the greatest elevation are the Königstein, which rises to 3024 feet; the Ochsenkop, to 3238; and the Schneeberg, to 3425 feet. These which were previously mentioned are the most extensive; the whole mass rests about 1700 feet above the sea-level towards the south and west, and towards the east and about 1800 feet.

The Fichtelgebirge is the central point of a triangle, two of whose sides are in the direction of the mountain-ranges from the north-western extremity to the south-eastern. The third side, which is immediately connected with the Fichtelgebirge, is the Römerwald (or Forest of Bohemia), which runs off in a south-eastern direction.

In consequence of this disposition of the mountain-ranges which issue from the Fichtelgebirge, the waters collected on its slopes run off to the four cardinal points. On its southern side it is nothing to be seen but the Danube, by which its waters are carried to the Black Sea; the Main, rising on the western declivity, mingles its waters with the Rhine; and the Erziger, which carries off the waters from the eastern slopes, falls into the Elbe, as well as the Snaie, which runs near the northern extremity and runs northward.

The nucleus of the mass is composed of granite, gneiss, and mica-slate; but on the north-west side it is surrounded by extensive beds of clay-slate and grauwacke. Its mineral wealth is not great. It contains extensive beds of iron ore, which is the only metal that is worked on an extensive scale. Copper ore occurs frequently, but always in small quantities that it cannot be worked. Gold was formerly obtained by washing the sand of some rivulets. Lead and silver occur in the northern part of the mass in large quantities. In other places there are some precious stones, as garnets, tourmalines, &c.

FICINO, MARSIPIO, born at Florence, A.D. 1433, was the son of Pico, the physician of Cosmo de' Medici, and spent some time in the service of the Medici family, generally provided for his education. Ficino studied Greek, and applied himself especially to the works of Plato, which he translated into Latin. He afterwards translated Plamenius, Jamblichus, Proclus, and Porphyrius, and became a sort of private professor at the court of the Medici family. He was one of the preceptors of young Lorenzo, Cosmo's grandson. Cosmo appointed him president of the literary society which he assembled at his house, and which was called Academia Platonica, having for its object to extend the knowledge of the Platonics, whose works were greatly encouraged by Lorenzo, were cheered by symposia, or annual banquets, on the anniversary of Plato's birth-day, of which he held at the villa of Careggi. Ficino himself gives an interesting description. The Academicians were to hold a general assembly in the church of the family of the Medici; 2nd, the teachers, who consisted of the most learned men of the time, such as Pico della Mirandola, Poliziano, Leon Battista Alberti, Landino, and others, who assembled at the house of the Medici, and composed their Specimen literaturae Florentinae, vol. ii.; Brucker, History Philo., tom. iv., period the 3rd, b. 1)

At the age of forty Ficino resolved to devote himself to the church, and being ordained, his patron Lorenzo con- fered upon him a canonry in the cathedral of Florence. He now made an attempt to amalgamate the theologies of Plato with Christianity, and in so doing was at times car- ried by his zeal beyond the limits of sound criticism or taste. He was however sincere and single-minded, exemplary in his private conduct, and exact in his temper, and, contrary to the practice of most of his colleagues, in averse from literary feuds and rancorous polemics. Being of a diminutive size, and of very precocious health, he says himself that he hardly passed a day without bodily pain, and he constantly applied to study. Ficino was spent at the various country residences of the Medici near Florence, in which he composed his works. He died in 1499, at the age of sixty-six, and his countrymen raised to him a monument in the cathedral of Florence, with his picture by his pupil, Punzano. Some of his works were collected and published at Basel, 2 vols, folio, 1491. They consist of translations from the Greek philosophers, original treatises on metaphysics and ethics, his Theologia Platonica, and other writings. His Latin epistles, his dialogues, and his poems are of great interest to us, and are the means of giving an account of the details which they contain concerning the distinguished scholars collected at Florence by the fostering patronage of Lorenzo. Ficino wrote also a work 'De Religione Christiana,' and a commentary on the 'Epistles of St. Paul,' the 'Mystics,' 'Magnificent; Corniani, Seoli della Letteratura Italiana.'

FICODIEE. [Meembraycex.] FICTION. [Novel; Romance.]

FICTIONS [in Law] have been somewhat quaintly de- fined to be that which is 'utterly false and contrary to the nature of the whole human body, but are so acknowledged and accepted in law for some essential purpose.' These essential purposes are various. The law, it is said (by which we must understand those who for the time are the interpreters of it), shall never make any fiction but for necessity, and in avoidance of a mischief (Coke's Rep. iii. 30). This is as much as to say that those who interpret the law will, in order to avoid a special hardship, or remove some unexpected difficulty not provided for by the law, resort to a fiction, that is, they will imagine something that is not real, when it is necessary that it should be true, or when it is not always a good end in view, that is, an end considered good by those who make or maintain the fictions. It was wisely said, that fictions of law must not be of a thing impossible: but the reason is rather curious; 'for the law mistakes nature.' If we object to the soundness of the rea- son in the instance last mentioned, we cannot but approve of the following rule as to fictions—that a man could never...
be subject to the penalty of a statute by a fiction of law. The law, it was said, would also make fictions in order to avoid absurdity; but this could hardly have been said in
ernest. Blackstone shows (iii. 43) by what manner of fiction the Court of King’s Bench originally held pleas of all personal actions— It being surprized that the defendant is arrested for breakage, which he has done in reality or admitted; and being thus in the custody of the marshal of the court, the plaintiff is at liberty to proceed against him for any other personal injury; which surprize, of being in the marshal’s custody, the defendant is not at liberty to dispute. Such liberty of disputing the fiction would clearly spoil the whole business, and was therefore as necessarily disallowed as the fiction was allowed. Of the same kind is the fiction mentioned by Blackstone (iii. 107), by which a contract made at sea is foigned to be made at the Royal Exchange, and the plaintiff, by the ingress of the suit from the courts of Admiralty to those of Westminster Hall. ‘Such fictions,’ as Blackstone remarks, ‘are adopted and encouraged in the Roman law: a son killed in battle is supposed to live for ever for the benefit of his parents; and by the fiction of postillumnum and the lex Cornelia, captives, when freed from bondage, were held to have never been prisoners; and such as died in captivity were supposed to have died in their own country.

Fictions in law, though often ridiculous enough, have generally a great deal of force in them. They are founded in some of the laws or course of procedure, and have pointed out in what respects the judges or interpreters of law, and, as we may suppose, general opinion also, under the influence of which judges must to some extent be, have felt that change was necessary, or found the consequences, so far, have been beneficial; but it must be remarked that they are the indications of a rude state of social organization, and must gradually disappear with the improvement of the institutions of society; for their existence supposes a defect in the means of legislation."

Ficus, a large genus of Uraceous plants having the flowers, both males and females, mixed indiscriminately on the inside of a fleshy receptacle, which is so concave that its edges are drawn together into a narrow opening. This is excited, and the common pistil from the fig, the receptacle of Ficus Carica, which, although resembling a fruit as simple as a gooseberry, is in fact a collection of a large number of minute unisexual flowers growing to a succulent base; at its apex will be found the narrow opening where the edges of the receptacle are drawn together, and when its interior is laid bare, the flowers are seen closely packed all over its surface, divided from each other by soft colourless bristle-like bracts or scales. What are called the seeds in the ripe fig are the pericarps, each of which contains a single seed. There are two sets of the numerae seed-wings, having times only 3, sometimes 7 or 8. The stamens are solitary in many species, 3 in others, and 5 in some. The pistil consists of a single ovary terminated by a stellated style, ending in a two-lobed stigma.

The Ficus is a very large genus, of which there are more than 500 species, some of which are very large and some of which are small and daughter plants. The Ficus carica is the fig, which is common in the East, and is extensively cultivated as a fruit tree. It is a large, spreading tree, with a trunk covered with a mass of leaves, and with a large number of branches. The leaves are large, and have a rough, leathery texture. The flowers are small and greenish, and are borne in clusters. The fruit is a large, thick, fleshy mass, with a hard, woody interior. The fig is a very valuable fruit, and is extensively cultivated in warm climates. It is a popular food, and is also used for making jams and preserves. It is also used for making paper, and is called "fig paper."
which bound the province of Sileth on the north, where it
grows to the size of a European yacanmore, and is called
Kamaer. It is chiefly found in the chasms of rocks and
over the declivities of mountains among decomposed rocks
and among stones. The roots are of an inconsiderable
abundance of milk, which yields about one-third of its
weight of caseous. It grows with great rapidity; a tree
is described as being twenty-five feet high, with the trunk
a foot in diameter when only four years old. The juice of
this valuable plant is used by the natives of that part to smear
over theinside of baskets constructed of split rattan, which
are thus rendered water-tight. Old trees yield a richer
juice than young ones. The milk is extracted by incisions
made across the bark down to the wood, at a distance of
about a foot from each other. All around the trunk or branches
up to the top of the tree, and the higher the more abundant
is the fluid said to be. After one operation the tree requires
a fortnight's rest, when it may be again repeated. When
the juice is exposed to the air it separates spontaneously
into a firm elastic substance, and a fetid, yellow-coloured
liquid. Fifty ounces of pure milky juice taken from the
trees in August yielded exactly 165 ounces of clean washed
caseous. This substance is of the finest quality, and
may be obtained in large quantities. It is perfectly soluble
in the essential oil of Cajuut. ( Roxb., Fl. Ind. iii. 543.)
3. Ficus religiosa, the Pippal Tree, is a large tree com-
mon in every part of India, especially near houses, where it is
planted for the sake of its extensive dark greyish shade.
It is held in superstitious veneration by the Hindoos, because
the greatest philosophers of Brahmidt in their conclaves
are seated under its branches. The leaves are heart-shaped, long,
pointed, wavy at the edge, not unlike those of some poplars;
and as the footstalks are long and slender, the leaves act
ually tremble in the air like those of the aspen tree (Popu-
lus). The leaves are used for tanning leather by the Arabs, who
call the tree Mudhik or Vudhah, and also mudhak. See Asiatic
Researches, iv. 399, for further information concerning this
species. Ficus religiosa, or sycomore fig, is a large tree found
in Egypt, where it is planted extensively by the road-side,
near villages, and on the sea-coast, for the sake of the shelter
of its very widely-spread branches. The Arabs call it Djammez. Forskahl states that its head is often
foryard in diameter. The leaves are broadly ovate,
reapd, or somewhat angular, rather blunt, nearly smooth,
heart-shaped at the base. The figs are not produced upon the
young branches, but in clustered racemes upon the trunk
and the old limbs. They are sweet and delicate, and especially
appreciated for their medicinal value, for Forskahl excludes it from the lists of carpenters'
wood, and places it among the trees which are used for fire-
wood. It can hardly therefore have furnished the wood of
which manyy-cases were made, as has been supposed.
Preparations from it are said to be occasionally used
were made from the timber of Cordia Myxa. When old
this tree becomes very gnarled and broken, as is shown in
a plate in Salt's 'Abyssinian,' where it is figured under the
tear of Daroo tree, but it is so bare of foliage as to be hardly
a picturesque object.

FIDDLE. [VIOLIN.]
FDI -erior COMMISSUM, in the Roman law, is something
given by will or codicil, not directly to the person benefi-
cially interested in it, but to some other person, with a re-
quest that he will transfer it to the party for whom it was
intended. The person to whom such an instrument was called Heres
Fideicommissarius. It was necessary that an heir (heres
in the Roman sense) should be named, or no property
could be transmitted to the Fideicommissarius. (Gaius, ii. 248, &c.) Originally it entirely depended on the good
faith of the trustee (fiduciarius) whether he performed the
will of the testator or not.

The origin of these fideicommissi probably was in a de-
sire to evade the strictness of the old civil law, as we see
in the case of Q. P. Rufus (V. Max. iv. 2, 9), who being
an exile was incapacitated from taking a gift under the will of
a Roman citizen, but yet could claim it from his mother,
whom it had been given in trust for him. In the time of
Augustus the rights of the fideicommissarius became leg-
ally established by the emperor giving the consuls jurisdic-
tion in such matters. Afterwards pretons were ex-
pressly appointed, under the name of praestores fidecom-
missarii, to take cognizance of such trusts, but the consuls
still retained their jurisdiction also. In the provinces the
governors (principes) took cognizance of fideicommissi.
(Ulpian, Frag. 25, 12.) Fideicommissi, or trusts of special
things, became gradually assimilated as to their qualities
and incidents to legacies: the following remarks apply to
fideicommissi, where the whole inheritance (hereditas in
the Roman sense), or a determinate part, was given
to a trustee in trust.

By the old Roman law the heres, on taking possession of
the testator's property, became liable to all his debts and ob-
ligations, and consequently those who only took the property
in trust were saved as principals (fideicommissi) was often refused to encumber
theirselves with a burden from which they could derive no
advantage, and might sustain great loss. To remedy this
inconvenience, it was enacted by the Senatusconsultum
Trebellianum, passed in the time of Nero, that when the
trustee had given the property to the testator, he should not
be responsible for anything which the legatee might do.
(Cestus que trust of the English law), all right of actions
by or against the trustee, in respect of the property, should
be transferred to the cestui que trust.

If the trustee refused to accept the inheritance, the
trust, on the petition of the cestui que trust, could compel him
under the Senatusconsultum Pegasiannum, passed in the
time of Vespasian, to accept and to transfer the prop-
erty to his cestui que trust, who took it with all its bur-
dons. No particular form was requisite in order to effect
this transfer.

By the Senatusconsultum Trebellianum, if the heres was
required to transfer not more than three-fourths of the inher-
tance to the cestui que trust, the two parties were liable
to all suits and burdens in respect of the property according
to the cases of the several twelfths of the property. If the
transfer was not made before three-fourths of the whole, the
S. Pegasiannum allowed him to retain one-fourth, as the
Falcidian law did in the case of legacies. If the heres let himself be compelled
to accept the trust under the S. Pegasiannum, he lost his one-
fourth. (Dig. xxxvi. Tit. 1. S. C. Trebellianum.)

The cestui que trust was himself sometimes only a
trustee for others, and in this case never had the benefit of
the one-fourth: the same was the case if a legatee had
to transfer a legacy to another.

FIE. [PATE.]
FIELD OF VIEW. [TELESCOPE.]
FIELDFAR, [MILITARY.]
FIELD MARSHAL, a military dignity conferred
on such commanders of armies as are distinguished by their
high personal rank or superiority.

It has been supposed that the term marshal is derived from
Martis Senneschallas, but it is more probable that it came
from the Saxon words mar, or marshach, a horse, and
scilch, a servant; and it appears to have designated the
commander of cavalry under the king next in dignity after
the royal stables. In the Teutonic laws such a person is
called maris calcus, and the fine for his murder is par-
cularly specified.

The earl-marshals of England had originally the chief
command of the army; and history records the names of
two noblemen, De Montmorency and Fitzosborne, on whom
the title was conferred by William the Conqueror.

The office was by Henry VIII. made hereditary in the
Fielding however did not make reprisals, but contented himself with noticing Charissa in a favourable manner, in a publication which he at that time conducted, called 'The Jute.'

After the publication of 'Joseph Andrews,' Fielding wrote another play, 'The Wedding Day,' and a tract called 'The Journey from this World to the next,' which were followed by 'Jonathan Wild.' The Rebellion of 1745 induced him to publish a third tract, 'The Jacobite Journal,' directed against the party known by that name, and in support of the Hanoverian succession. This, with other publications of the same kind, at last obtained him a small pension and the place of Justice of the Peace for Middlesex, a post which he is said to have owed to the influence of Lord Lytton.

Horace Walpole, with his usual mixture of soppery and snappiness, gives a very unfavourable account of Fielding's habits at this period, but his conduct as a magistrate proved that he was not such a settler in the art of collecting small trading justices, one of whom he describes so forcibly in 'Amelia' under the name of 'Justice Thrasher.'

Amidst the laborious duties of a magistrate and pamphleteer, for Fielding was both at once, he contrived to produce 'Tom Jones,' a novel written in the style of the old comedies, and to practise his own in a novel called 'Amelia,' which was fielding's last important work. It was published in 1761, soon after which time he was attacked by dropsy, jaundice, and asthma, and when all remedies had been tried in vain, the last remedy of self-nourishment was proposed by his physicians. He left England for Lisbon June 26, 1764, and died in Indonesia of the same year, aged 47, leaving a widow and four children.

Fielding has been styled, with perfect justice, the father of the English novel. Sir W. Scott observes that Richardson by no means succeeded in escaping from the trammels of the French romance. Harpsichord, he adds, is not the proper instrument of the impossible and improbable heroism of that class of writing; and the length of 'Sir Charles Grandison' bears no small resemblance to 'Le Grand Cyrus.' But in Fielding's works we find the most perfect delineations of the human heart; a picture of life and manners which make it still more improbable that his genius should not have been adequate to portray women of higher station.

Opinions have been much divided as to the tendency of Fielding's works. We have little hesitation in pronouncing it to be, on the whole, moral, and decidedly more so than that of Richardson's. It is true that scenes of extreme indelicacy occur, often very unnecessarily, but the manners of the time admitted allusions and even expressions at which shocked a more refined taste, but which, by the indulgence of the author, were turned into material of life and energy, which makes it still more improbable that his genius should not have been adequate to portray women of higher station.

Nichols ('Literary Anecdotes,' vol ii. p. 366) assumes that 'Joseph Wild' preceded 'Joseph Andrews.' Claimers existent amongst his earlier works, produced before his gift he had attained its power, but as one from Sir Walter Scott, to have followed a macaroni which appeared in 1748, one year after the publication of 'Joseph Andrews.'
palliate bad actions by specious phrases. The character of Tom Jones seems to us not to have met with a fair share of praise. His generosity and nobleness of nature are, it is true, partially obscured by connexions of a degrading kind in which he so often falls; and however much he may fail of perfection, he cannot be called depraved. His love for Sophia is an affection of a kind which no thoroughly bad heart could entertain. He has all the materials of a fine character, and therefore there is no poetical injustice in making him the hero of the ecclesiastical and chivalrous chafers of the defendant within his diocese the sum therein mentioned. It is tested and made returnable exactly in the same manner as a common fieri facias, and is executed by means of a sequestration issued by the registrar of the diocese.

FIESCHI. [Doria]

FIESOLE. [Eturia; Florence.]

FIFE, a very small flute with never more than one key, and seldom that, giving acute piercing sounds, and used, apparently, in connexion with other instruments of the same nature, as in the orchestra of Tulli, &c. It is an octave higher than the flute, and in compass comprises two octaves. Fifes are of three sizes, named by the letters A, B, and C. The first is the lowest; the middle, which is the common use, is the highest.

FIFEISHIRE is a severe little lowland country on the west side of Scotland, comprising the peninsula between the Frith of Firth on the south, the German Ocean on the east, and the Frith of Tay on the north. On the west it is bounded by the counties of Perth, Kinross, and Clackmannan. It lies between 56° 3' to 58° 25' N. lat. and 2° 20' and 5° 53' E. long. The outline is very irregular. The extreme length of the county from north-east to south-west is about 45 miles. The area contains 504 square miles, or 322,560 acres, of which more than four-fifths are arable and pasture, and one-fifth consists of hills, moor, moors, roads, and woods.

General Appearance and Soil.—The county, when viewed from the loveliest summits, presents a pleasing variety of mountains, valleys, vales, plains, and moorland. One of the two highest hills in the county is the Lamond Hills on the west is 1720 feet above the level of the sea; the Largo Law on the east is 1020 feet; and the Norman Law on the north, 850 feet. A great proportion of noblemen's and gentlemen's seats appear in the midst of old plantations and extensive pleasure-grounds; and the scenery, on a closer view, exhibits deep, romantic, and well-wooded glens. Fifeishire is justly considered one of the best of the Scotch counties. It is well cultivated, has an unusual proportion of gentlemen's seats and plantations, and its cottage beauties as well as its country seats are of high value.

Pennant, in his 'Tour in Scotland' in 1772 (part ii. p. 212), remarks that the peninsula of Fife is so populous that, excepting the environs of London, scarcely any part of South Britain can vie with it. Fertile in soil, abundant in pure water, happy in climate and situation, it is by far the most flourishing and fashionable portion of Scotland. It is divided into three counties, Fife, Kinross, and Clackmannan; and, like every other country, has its seasonable and convenient markets for the sale of the goods of the defendant, or the plaintiff may have a capias ad satisfaciendum for the residue. [CAPI.A.] The sheriff is not justified in breaking open any outer doors to execute this writ, but having peaceably obtained entrance, he may break open any inner door belonging to the defendant in order to obtain possession of the goods. The clothes which the defendant actually has on or in wearing cannot be taken, and royal palaces are privileged against the sheriff's intrusion for the purpose of levying upon goods therein. Formerly it was necessary that writs of execution should run twice or three times, and be returnable in term time; but now, by stat. 3 and 4 William IV., c. 67, they may be tested, that is, dated on the day when issued, whether in term time or vacation, and be made returnable immediately after the execution thereof.

If a fieri facias is issued against a clergyman, and the sheriff returns that he has no goods upon which the judgment can be levied, but that the defendant is a beneficed clerk not having any lay fee, the plaintiff may sue out a 'fieri facias de bonis ecclesiasticis,' which is directed to the bishop of the diocese, or to the archbishop during the vacancy of the bishop's see, commanding him to make of the ecclesiastical goods and chattels of the defendant within his diocese the sum therein mentioned. It is tested and made returnable exactly in the same manner as a common fieri facias, and is executed by means of a sequestration issued by the registrar of the diocese.

Hydography and Communications.—Fife is watered by numerous streams, of which the Eden and the Leven are the chief. Fresh springs are found in almost every field. The small river Eden, which rises in the Lamond
Hills, less about twenty miles east and north east through the central vale of Home of Fife, past the borders of the county of Clackmannan, and then across the Forth, in the county of Fife. The stream is shown to have a great variety of little ports; art, however, has made it available for the movement of mills and of powerful manufacturing machinery. [Cont.]

Red and white trunks, pike, and eels, are abundant in the deeper parts, and salmon are taken near the entrance to the Lindsartone. The River Leven has its sources in the Western Hills. Taking an easterly direction, it receives the Oy Water from Loch Fitty, and flows into the Frith of Firth at the village of Lecan. In a course of twelve miles it turns forty-five miles for cotton, flax, paper, spun, fulling, oil, &c. The water being very clear and soft is well adapted for bleaching. Before the establishment of bleaching fields along its banks, it was the best straw stream in the county. Fine salmon were taken in the loch, and thousands of eels in their passage thereto to the sea. There is still a salmon fishing in the loch. In May and July, the eel tries to ascend the stream in millions, and when full grown in the loch and its marshes, they descend in September to the sea.

Some of the numerous small lochs of this county have been drained, and their sites have become cultivated fields. Several of those which remain greatly improve the picturesque beauty of the scenery. The Loch of Lindsartone in the north-west is a beautiful sheet of water, covering seventy acres, and the depth is twenty feet. Loch Fitty, near Dunfermline, is the next in magnitude. There are mineral springs in the county, and particularly two cataracts of great repute, near the town of Dysart.

About three-fourths of the county boundary are formed by the ocean and the great estuaries of Firths of the Forth and the Tay. Along the coast are numerous little harbours, and the principal ports are situated at the points of the adjacent unites, especially with Leith on the south and Dunleith and Perth on the north. The principal roads in the county are those which commence at the small towns of Burntisland, Dysart, and Leith, and extend from Perth, Cupar, St. Andrews, and Dunleith. During the last thirty or forty years all the roads have been much improved. The turnpikes are kept in good repair by parliamentary grants.

Climatic. An extensively presented plan of draining and forming estuaries has considerably ameliorated the climate, by clearing the atmosphere of malaria arising from stagnant water and decaying vegetation. The air in general is dry, healthy, and exhilarating. Many instances occur of great longevity. No pestilential epidemics appear. Ague are almost unknown, and fevers have a character comparatively mild; indeed no diseases are ever attributable to local causes. Along the coast of the Frith of Forth the air is particularly dry and salubrious. The excellence of the climate and the elevation of the surface above the level of the ocean, the absorbent quality of the soil, and the shelter afforded by numerous plantations and estuaries; but in the west and north-west districts, which have greater elevation, with a soil wet, earthy, and thickly cultivated, have a comparatively damp and cold. From the hills of Fifeshire lying generally in a line from north-east to south-west, the valleys are much exposed to severe easterly and north-easterly winds.

But the greatest improvement experienced by the agriculturist in this county, and in every part of Scotland, is occasioned by the frequent sudden changes in the weather.

Mineralogy. Natural Productions. The county of Fife, in a geological point of view, is one of the most interesting in Scotland: it is rich in organic remains. Coal and ironstone are found in almost every part of the county south of the Eden; but they are not found in the upper division, north of this river. Along the shore of the Frith of Forth, from Torryburn in the west to Pittenweem in the east, the strata of coal are generally of medium to fine quality, and the seams are thin. They terminate on the one hand at the distance of two or three miles from the water edge, and on the other they are continued beneath it. Another tract of coal, to the north of this, extends through the higher ground, nearly parallel, from the north of Dib.theri and Cupar, and thence to the parish of Dunino, a little to the south of St. Andrews. The depth of these strata is almost invariably north and north-east. In the irregular hills along the southern bank of the Eden the strata are found in every variety of position, cropping out and dipping towards opposite points of the compass. The coalfields are numerous, and some are very extensive, and employ a large number of hands. The working of those at Dysart commenced about 250 years ago. Some of the surface coal at Dysart is used for bituminous purposes. The extensive coal works in the parish of Dalgety, are the most valuable in the western part of the county. The pits are 300 feet in depth, and have been worked nearly 250 years.

Limestone quarries are numerous in various parts of the southern district. The lime works of the Earl of Elgin, three miles east of Torryburn, are perhaps the most extensive in Scotland, yielding annually above 100,000 tons; also in the parish of Burntsland, six miles east of Dunfermline, and in many other places, inexhaustible quarries are constantly worked.

Bennachie is plentifully obtained in several parts of the coal fields, especially near Dysart, and in the parish of Balgonie. It yields from 40 to 50 per cent. of metal, and is of great value. Lead has been found in the parish of Balgonie, at the foundry of the Carron Company. Lead mines have been worked in the Lamond Hills.

Freestone of a superior quality is found in great abundance south of the Eden, particularly at a line quarry in the parish of Burntsland. An excellent freestone, well adapted for paving, is quarried in the parish of Strathmiglo, and near Dunfermline and north of the Loch Fitty there are vast rocks of white freestone, susceptible of a fine polish, and especially suitable for mantle-pieces and sills. Among the various quarries, the rocks of the northern hills there are boulders of the primitive rocks—granite, gneiss, quartz, mica-slate, with garnets and primitive green-stone; many of these are of very large dimensions.

Clay. A great mass of clay or green-stone is very abundant, especially in the northern parts; it is generally hard, firm, and very durable, and, when neatly dressed, is an excellent material for the construction of houses. On the shore near Burntsland, and in some other places, are found beds of a hard dark-coloured clay, which is used for bricks to contain the heat for several years without waste or injury; it is therefore much used for grates and ovens. Marl of a rich quality is found in some places near the surf, but it is not much used by the farmers for manure, not only of the common kind, but of firebricks of an excellent quality. Peat in some parts is plentiful. Agates and very beautiful crystals of carbonate of lime and sulphate of borace are imbedded in the whitestone rocks of Monnairn and Newburgh: and agates, cornelian, jasper, and brilliant values have been found in the bed of the Eden and at East's Ferry. In the parish of Dysart fossil trees and numerous other remains have been found in the rocks. The antlers and skeleton of a very large animal, living up a few years ago in a near pit in the parish of Collessie.

There are a few patches of natural wood in Fife. The plantations are numerous, and the timber in them, which is mostly oak and valuable, consists of ash, elm, beech, and maple, with considerable beeches, oaks, elms, and maple trees as amongst the largest plantations are those of the Earls of Crawford and Leven. They are also remarkably fine at Leslie-house in the parish of Leslie, where there is an avenue of beeches of large dimensions, about 200 years old. In recent times many hundreds of acres of waste land have been planted with forest trees, the want of shelter being one of the greatest disadvantages of this county. In the single parish of Collessie 120 acres have been covered, chiefly with firs. Owing to the great number of opulent proprietors who reside or have resided in the county, the number of unusually abundant farms and large estates is very numerous, extensive, and well attended to, producing abundance of all the usual useful vegetables and hardy fruits. Orchards are rare and only recently planted. Near Newburgh about 40 acres laid out in orchards are yielding supplies of excellent apples and pears.

Most of the indigenous and other animals of Britain, wild and tame, are found in this county. Game birds, especially pheasants, are abundant, and the hawks are visited by wild geese, ducks, teal, eels, and occasionally by wild swans. Joggers frequent both fowl and game birds. The Burman and other recent Charters, the Dugfer, Kingfisher, and Partridge-Piper.

Agriculture. Buildings, &c. It has already been stated that four-fifths of the surface of this county are arable. Farms vary in extent, from 50 to 500 acres. The average may be about 120 acres. Property in land is perhaps more equally divided, and distributed among a greater number.
of proprietors that, in any other county of Scotland. The annual value of a large proportion of the estates is between 401L. and 3001L, and a few from 3001L to 6001L. A much greater number range from 401L. to 404L. a-year. The number of heritors paying cess taxes exceeds 1200. In the agricultural survey published in the year 1800 an enumer- ation is given of the crops cultivated in the county, and it appears that period several hundred thousand pounds have been expended in new erections and architectural improvements.

Fifty years ago most of the rural dwellings and farm- steads were of the most wretched description. The farmers usually lived in low, smoky, badly-lighted cottages, without any interior divisions except those made by the furniture. The greater number of these have been replaced by neat and commodious houses, and the farm offices, which formerly were a wretched and filthy, have given place to edifices in which the greater portion of the county is now enclosed, and the fences consist either of stone dykes or thornd horns. Drainage having been very extensively and successfully executed on tracts of flat and swampy land, has greatly improved the appearance, productiveness, and health of the county, and in the sites of several considerable lakes are now bearing the finest crops of grain. But much improvement in agriculture still remains to be accomplished, especially on the western side of the county, where enclosures are yet only partial.

Crops.—The principal crops are of oats, wheat, and barley. As oats are more generally adapted to the soil and climate, the cultivation is more extensive than that of any other kind of grain, and though the poorest families now eat wheat-bread, several parishes in Fife at the time of the agricultural survey were chiefly dependent on people as an important article of food in the form of cakes, of porridge, eaten with milk or small beer, and of a pudding called souce, which consists of meal obtained from the bean by steeping it in water, whence it acquires an acrid flavour from the process of fermentation. Third or forty thousand acres are annually sown with oats, and they are generally found to be a very profitable crop.

About 20,000 acres are annually appropriated to the cul- tivation of barley. The meal of this grain is used for bread extensively by the poorer class of labourers, who sometimes mix it for this purpose with peas and beans. Of the quantity exported a considerable part is in the form of pot or pear barley; but by far the greater proportion of the produce is consumed by the breweries and distilleries in the county.

The annual crops of wheat occupy from 8000 to 10,000 acres. This valuable grain is well adapted only to some parts of the soil, and requires more care and expense than oats and barley; the crops however are generally very fine and wholesome, and the grain grown in Fife, barley, is carried on chiefly at the port of Kirkaldy.

Peas and beans, which occupy about 7000 acres annually, are found to thrive best in the northern and southern dis- tricts. In the midland and western parts the crop is more scanty and precarious. Much of the produce is exported, and the rest is consumed in the county chiefly as food for horses and hogs.

Potatoes, a hundred years ago, were cultivated only in the gardens of a few of the rich proprietors. Since the in- crease of population and the cultivation of this useful root the county has not experienced the extremes of scarcity approaching to famine to which it was previously subject. At present, potatoes constitute one- third of the food of the poorer people during eight months of the year. On every farm a sufficient quantity is planted for the tenantry, and the remaining crop is sold, often at the vicinity of every town and village. The number of acres annually appropriated to this crop may be about 6000 acres. Some cargoes of them are exported to the London and other markets.

The crop is also used for fattening cattle, and feeding milk-cows and young stock in sheds. Sheep are not so commonly fed upon them. They probably occupy annually about 5000 acres.

Flax in Fifeshire is an important crop, occupying an- nually about 2000 acres; the produce is manufactured by the large flax manufactures of this county, principally at Dunfer- mline.

Rye, cabbage, coloerow, kale, tares, and carrots are culti- vated to a small extent on particular farms. The number of acres in meadow and pasture, including, besides arable land, commons, hills, and parks, is stated in the Agricultural Survey to be at least 140,000 acres. Of this extent about 12,000 acres are annually under ryegrass and clover.

Lime being abundant and cheaply obtained, is very gen- erally used for manure. Compost dung-hills are very common, and in a smaller degree marl, peat, coal-ashes, a sea-reef, and loam are applied to certain soils and crops.

For particulars concerning the rotation of crops which is very various in different parishes, see The New Statistical Account of Scotland, Nos. X. and XI.

The county of Fife has been long distinguished for the excellence of its breed of black cattle. The prevailing colour is black, though in the true county but a very variety of colour is found. The body has a round and bulky form. The bone is small in proportion to the carcass. The limbs are short and well proportioned; the skin soft, and the horns small, curved forward, and erected at the points. The head is small, but very full of brawn and throat, and finely diminished at the muzzle. They are hardy, fleet, travel well; are tame, docile, and excellent for work in the plough or cart, and they fatten quickly and ill up well at all the choice points. When fat, they bring a much higher price at Smithfield than in the Scotch market, and are selected by the English butchers for the tables of their most luxuriant customers. A Fife bullock will often bring a higher price in the London market than an English one ten miles nearer and of a better kind. The Fife cows are also of high repute in the dairy. The breed is from five to seven gallons of milk per day. They are usually milked thrice in the day. Calves are sometimes partly fed on hay-tes and oatmeal-gruel. The number of milk-cows in Fife varies greatly from year to year, but the number of cows stated at 10,000, and the whole stock of black cattle at up- wards of 60,000. The Ayrshire, Teeswater, and some English breeds have been, it is thought, injudiciously intro- duced, since none possess qualities superior to those of the true Fife breed. In Fife, though not very numerous in Fife, but recently a large number have been slaughtered at Kirkaldy and sent by the steam-vessels to London. The flocks are small, chiefly of the Cheviot breed. Hogs, though not con- sidered as a primary article of farming stock, have lately become very numerous, and are kept by all the farmers and cottagers for the domestic supply of pork and bacon. A few cargoes of them are exported to the London and other markets. The breed of horses, which formerly were small, unsightly, and ill suited either for saddle or harness, has been improved very much. All kinds of horse, as well as grey and pigeons are abundant and skilfully reared. Modern improvements in agricultural implements are adopted throughout the county. Threshing-machines, some of which are driven by steam, iron ploughs, &c., are in common use. The average rent of the soil is 2S. to 3S. per acre. The sheep are generally for 19 years. Labourers' wages are generally about 1s. 6d. per day for men, and 9d. for women, and many are paid with provisions instead of money. There are several active agricultural societies in the county.

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any other in the county. The different kinds of linen goods manufactured are damasks, diap... of the name of Fifeness, means the point or mouth of the peninsula.

The origin of the name of Fife has puzzled all the antiquarian writers on this part of the county. The moorish chronicles attribute it to the Berbers, a chief whom Duncan Macduff was first earl of Fife by King Malcolm Canmore (Malcolm the Third) at his first parliament held at Forfar about the year 1057. This Duncan being a man of great property and power, was much dreaded by the tyrant Macbeth. His influence disposed his countrymen to join the English who came with Malcolm Canmore, and the restoration of the latter to the crown of Scotland was accomplished by his important counsels. For these and other good services great honours and privileges were bestowed upon him. One of the most remarkable of the advantages granted by the king was connected with the conspicuous cross of Macduff, hereafter noticed. Of Duncan Macduff, who is interesting as the ancestor of several existing families of the nobility and gentry of the county, and as being one of the earliest inhabitants of the Peninsula of Macbeth, an elaborate account has been collected by the learned and voluminous antiquarian, Dr. Sibbald, from numerous monastic and other documents. This and similar accounts of the successive earls of Fife comprise chapter i. In the ... of the full title is as follows—The History, ancient and modern, of the Sheriffdoms of Fife and Kinross, giving a description of both, and of the Firths of Forth and Tay, and the Islands in them, with an account of the royal seat and castles, the parochial and poor's schools, and the most remarkable houses of the nobility and gentry, and of the natural products of the lands and waters; by Sir Robert Sibbald, M.D., new ed., Cupar Fife, 1809. Chapters 4, 5, and 6 describe the language, costume, and topography of the county. The last is a most learned account of Fife, showing from Tacitus, Bede, and many other authorities that they were red-headed and big-nosed (reda comae, magni artus). Chap. 7 describes the invasion, devastation, and remaining monuments and relics of the Reformation. Some of the considerations on the antiquities caused by the invasions of the county by the Danes. After the termination of the jurisdiction of the earls, whose chief residences were at Cupar and Falkland, and whose courts had full powers to decide all civil and criminal causes; and of the most considerable of the sheriffs and stewards, and the bailliages of the churchmen, and wherever the king had a seat there was a considerable...Fife was the district where the Scottish Protestant reformation commenced. The increasing national prejudices of the Covenanters, and still remain staunch adherents of ecclesiastical Presbyterianism, which however differs virtually not much from the Episcopalians to which it is nominally opposed. There are 53 parishes and as many Presbyterian churches, besides about 40 meeting houses of Presbyterian dissenters, but only 4 episcopal chapels. The county forms an ecclesiastical synod, divided into 4 presbyteries.

This county contains a great number of ancient edifices on the coast, of the power of the sea, but now either fallen or falling into decay. Some of these ruins are truly magnificent, and are striking monuments of the taste and elegance of the feudal and monkish ages. In the town of St. Andrews the remains of several superb structures are still visible, some of the most considerable of which are vestiges of many ancient buildings of great extent and magnificence. [Dunfermline.] Newburgh, is in the middle of a large and fertile field, rising gently from the margin of the Tay, stand the venerable ruins of the oblong church founded by David, earl of Huntingdon, in 1178, in commemoration of his taking Polesmain in the Holy Land, was bestowed on the Benedictine monks, and was one of the most richly endowed monasteries in Scotland. Sintell fruit trees rise from the slopes of its once sacred halls and lofty aisles, in...
tempered with ivy, hazel, and wild flowers of various and brilliant hues, which cling to the mouldering fragments of the walls. The whole produces a very picturesque effect. In the same neighbourhood are the remains of two very curious ancient structures. One is the cross of Mugdrum or Magdrin (a saint), consists of a pediment or plinth, with an upright shaft adorned with remarkable sculptures of animals and scrolls. (See an engraving and description in The New Statistical Account of Scotland. No. x. p. 68.)

Many small earthworks and ancient stones, and the adjoining counties, are traditionally assigned to the age of King Arthur, about A.D. 800. The other is the famous cross of Macduff, on the Ochiltrees hills, overlooking the beautiful valley of Strathbrian. It now consists only of one large block of freestone, from the remains of a sculptured shaft, which, in 1559, was destroyed by the mob of fanatical reformers on their way from Perth to the abbey of Lindores. It is surrounded by cairns and tumuli, containing, it is said, the remains of those who, having committed murder, fled to this cross, but fell in the stream of their claim of kingship with the powerful thane, who made it a sanctuary for his family; and the neighbouring rustics relate how lighted travellers have heard the shrieks of their ghosts.

The following lines from Sir Walter Scott's poem on this interesting monument are finely descriptive:

![Mark that fragment—]

I mean that rough-hewn block of marble stone,
Placed on the commence of mountains so.
Commanding prospect wide o'er dell and fell,
And peopled village and extended moorland,
Almost as pleasing to the eye as Tay.

To the far distant Grampians.

A ruined porrioi near by

Detached by storm and thunder—

Two the pedestal

Which a cross supports,

Carved with words which fold philosophic,

And the ovate it commemorates.

Weeds, which spring from the mouldering dust,

As were the mystic characters it bore.

The wondrous words here alluded to have been preserved by Sir James Balfour, the celebrated annalist, as follow:

"Malvaridruk drach, manrea, baltazha, larges
Ryed, rued, blickard, twued, blickard, twued.
Lothes luidinc ballenfric flates
Es otdruke ait sid this aisina burth
Skilus, at bldredum alv ime tike la pm arlenum.
Proper Macoug, otdruke alv ait sid this aisina burth.
Acpets amul derdrulam lamblida labrum."

Mr. Cunningham, in his learned Essay on this singular inscription, considers the words with which the Latin is intermixed as Saxtin Latinised; and the writing he believes to be a charter from Malcolm Canmore to Macduff, in virtue of which he is supposed to be the founder of the Abbey of St. Andrews. The kingdom of Fife by a tenure similar to that by which the famous Hugh Lupus held from William the Conqueror the government of the county of Chester.

Besides the abbeys of Lindores, there are remains of many other structures belonging to this period. The monks of the priory of Fitzwilliam, &c., are described by Dr. Grose as "Antiquities," Dr. Sibbald's "History of Fife," and The Beauties of Scotland, vol. iv. The large palace or castle of Falkland deserves particular notice. It was one of the seats of the Macduff, the thanes of Fife. By King James V. it was greatly enlarged and ornamented, and made a royal residence; being pleasantly situated in the midst of a fine country for the enjoyment of deer and boar hunting. The south front is magnificent, and in the parsonage house of the parish of Montmoll stands an old tower, known as Bethune's or Beaton's Tower. It formed part of the palace of the archbishops of St. Andrews, and in 1550 was the residence of Cardinal Beaton, who is several times distinctly represented in manuscripts of the period. The castle of Loch Orr stands in the middle of this loch, in the parish of Balingry. It was built in the time of Malcolm Canmore, and consists of a tower and other buildings surmounted by a strong wall. The ruins formed a beautiful object in the lake before it was drained. Seafield Tower is an old ruin on a rock surrounded by the sea. This consists of a large square tower, in the midst of the ruins of an extensive pile of buildings. Such buildings are found in several parts of the counties of Kincardine.

The castle of Loch Orr stands in the middle of this loch, in the parish of Kinmonth. The castle of Ravenscraig stands also on a precipitous crag projecting into the sea, in the parish of Kinmonth. It was inhabited in the time of Oliver Cromwell, and has been the scene of romantic legends. Macduff's Castle at East Wemyss stands on a high cliff overlooking the sea. Two square towers and some of the surrounding wall still remain. There are several other castles of Macduff in different parts of the county. Craig Hall, in the parish of Ceres, is an extensive ruin, where the bank of a beautiful glen filled with luxuriant trees. It was the seat of Sir Thomas Hope, Charles I.'s advocate. In the same parish is Tarvet Tower, a beautiful old fabric of grey stone, 24 feet square and 50 feet in height. It stands on high ground, and is seen at a great distance. From the battlement on the top, the great thickness of the walls, and smallness of the windows or loop-holes, it appears to have been a place of refuge and defence. Balmerino Castle, in the parish of Newburgh, is a fine old structure, and was the residence of the Earls of Balmerino, a family of great antiquity and strength, built probably in the twelfth century, with the castle of Loch Leven, which it much resembles. It stands on the south bank of the river Leven, about 40 feet above the water. An embattled tower, 45 feet by 36, rises 80 feet in height from the plain. It is surrounded by a wall and ditch. The ruins of the tower of Balmeroie, in the parish of Abbots Hall, are interesting, as having been the residence of the famous sage, prophet, or wizard, Sir Michael Scott. The walls are nearly 7 feet in thickness. On the bank of a stream from the base, tradition describes the white-haired old man as accustomed to sit at midnight watching and conversing with the stars. He was born at this place in the beginning of the eleventh century, and became a great profiteer in mathematics, scholiastic art, and the practice of alchemy, astrology, and divination, by studying successively at the universities of Oxford, Paris, and Padua, and in Germany and Norway. He is celebrated in Dante's Inferno, canto 20, and in Sir Walter Scott's Lay of the Last Minstrel.

In the counties of Fife and Kinross are found a remarkable number and variety of the vestiges of the Caledonian and Pictish inhabitants, and of their Roman and Danish invaders, ancient military forts and encampments, groups of Druiidical lilies, cairns, tumuli, and barrow-stones, stone circles, Celtic sepulchral urns, spear and arrow heads of flint, swords and battle-axes of brass and bell-metal, crosses, fonts, beads, Roman and other coins, weapons, &c. One of the small cairns, called the drum at a distance not long ago in the parish of Scouorie, contained, besides a large quantity of loose human bones, twenty stone coffins, formed with rough slabs cemented with clay. They held some mouldering skeletons and small Celtic urns of clay filled with calcium and bell-metal. The stones are cemented with numerous costs of arms of the ancient inhabitants, preserved in the parish of Inverkeithing. It may also be here mentioned that the roof and walls of Earl's Hall, a venerable old edifice in the parish of Leuchars, are entirely covered with fragments of glass, and it is probable that the same parish an urn, containing about 100 perfectly preserved silver coins of the Roman emperors, was turned up by the plough. Part of the church in this parish was built about the year 1100, and exhibits the most interesting specimen in Scotland of the Soane style of architecture. The mansion of the earl of Rothes at Leslie contains curious and valuable collections of old manuscripts, paintings, and tapestry. In Chambers's Picture of Scotland (2 vols. svo. 1827, pp. 160-225) there are notices of the most picturesque scenery and historic antiquities connected with the abbey and palace of Dunfermline, Falkland palace, the Valley of the Eden, or Howe of Fife, the castle and colleges of St. Andrews, Ravenscraig castle, &c. From the Skirball Law, and several other elevated points, the view extends beyond the county on every side.

Among the eminent individuals who have been natives of Fifeshire may be mentioned Sir Robert Sibbald the antiquary; Dr. Andrew Marshall, distinguished in medicine and anatomy; Dr. John Burnet, a learned writer; Robert Adam, an eminent architect; Dr. Watson wrote the life of Lord Gordon; Professor Tennant, of the university of St. Andrews, a distinguished oriental scholar; Admiral Grigg, whose abilities raised him to the chief command of the Russian navy, and afterwards to the peerage of Leslie. Dr. Adam Smith was a native of Kirkaldy, where not only the house but the room is shown in which he composed "The Wealth of Nations." It was in the parish of Leslio that, when a child, he was accidentally left in the fields and stolen by gipsies. Leslie Goldie is a native of Allan Vol. X.—2 M
Ramsay to be the scene of King James the Fifth's poem of 'Cricht's Kirk on the Green'.

Chief Town.—Cupar is the county town. The two other principal towns are Dunfermline and St. Andrews. The former is important as a populous centre of the linen manufactories of the Fife district, and is also that of the county schools. Dunfermline was a royal burgh, and is a centre of the coal-mining industry. St. Andrews is a university town, and is the ancient seat of the Bishops of St. Andrews. The town is visited by thousands in the summer months.

The population of the county is about 220,000. The chief towns are Cupar, Kirkcaldy, and Dunfermline. The population of Cupar is about 6,000, of Kirkcaldy 20,000, and of Dunfermline 15,000. The remainder of the population is divided among a number of smaller towns and villages.

The county is divided into 61 parishes. These are the parishes in which the education is provided. The schools are under the management of the local education boards, and are for the most part funded by the local rates. The schools are of the ordinary type, providing instruction in reading, writing, and arithmetic. There are also some grammar schools.

The county is noted for its agricultural produce, particularly wheat, barley, and oats. The county is also noted for its fishing industry, particularly in the Firth of Forth and the Tay. The county is also a centre of the coal-mining industry, with several large collieries in the Fife district.

The county is also noted for its antiquities, particularly the many castles and ruins in the area. The county is also noted for its natural beauty, with many scenic spots, including the Fife coastal path and the Trossachs.
collections and the interest of funded donations. (New Statistical Account of Scotland; Dr. Thompson’s Survey; Dr. Sibbald’s History; Beauties of Scotland, vol. iv.; Chalmers’ Caledonia; MacCulloch’s Statistics; Pennant’s Tour; Parliamentary Returns, &c."

**FIFTEENTH, in music, is the interval of the double octave.**

The Fifteenth Step in organs, is a range of metallic pipes, tuned two octaves higher than the diapasons.

**FIFTH, an interval in music, and the most perfect of concords, the octave excepted. Its ratio is 3:2. [Concord; Harmony]**

There are three kinds of Fifths: the Perfect Fifth, the Flat or Diminished Fifth (called also the Imperfect Fifth), and the Extreme Sharp or Superficial Fifth. The first (c, e) is composed of three whole tones and a semitone; the second (a, d) of two whole tones and two semitones; the third (c, g, a) of four whole tones.

**FIFTH MONARCHY MEN, a sect of religiousists, whose distinguishing tenet was a belief in the coming of a fifth universal monarchy, of which Jesus Christ was to be the head, while the saints, under his personal sovereignty, should possess the earth.** They appeared in England towards the close of the Protocols; and in 1669, a few months after the Restoration, they broke out into a serious tumult in London under their leader Venner, in which many of them lost their lives, some being killed by the military, and others afterwards executed. Several Fifth Monarchy Men also suffered death in 1662, on a charge (most probably unfounded) of having conspired to kill the king and the duke of York, to seize the Tower, &c. They are the same who were sometimes called Mennonarians, their notion being that the reign of Christ upon earth was to last for a thousand years. They seem also, from the extravagance and violence of conduct into which they occasionally broke out, to have been confounded, in the popular imagination, with the old Anabaptists of Münster. [Anabaptists]

**FIG, the Picea Carica of botanists, is a small tree with rough, lobed, deciduous leaves, naturally inhabiting the temperate parts of Asia, and now commonly cultivated in Europe for the sake of its fruit.**

In the fertile islands of the Mediterranean, in Spain, Italy, and Greece, and even so far north as the south of France, it is commonly raised as a valuable article of exportation in a dried state. A thousand tons are annually imported into Great Britain alone. The fruit is grown with some success even in the southern and milder parts of England, but it is seldom found in the northern parts, except under glass. It is only as an object of cultivation in this country that we have to consider it in this place.

The nomenclature of figs is in a greater state of confusion than that of most other fruits, and the descriptions of them generally so imperfect that the same kind is grown in different parts of the country under many different names; an account of their synonyms, as far as they have been determined, will be found in the Horticultural Society’s Fruit Catalogue, ed. 2.

The following is a list of the best sorts:

<table>
<thead>
<tr>
<th>Variety</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Ischia</td>
<td>Large white Genoa</td>
</tr>
<tr>
<td>Brown Turkey</td>
<td>Marseilles</td>
</tr>
<tr>
<td>Brunswick</td>
<td>Small early White</td>
</tr>
<tr>
<td>White Malta</td>
<td></td>
</tr>
</tbody>
</table>

The following have been recommended for a succession from August to October in the south of England:

<table>
<thead>
<tr>
<th>Variety</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Ischia</td>
<td>ripens in the middle of August.</td>
</tr>
<tr>
<td>Brown Turkey</td>
<td>Large white Genoa, end of August.</td>
</tr>
<tr>
<td>Green Ischia</td>
<td>Murrey, or brown Naples, middle of Sept.</td>
</tr>
<tr>
<td>Murrey, or brown Naples</td>
<td>Ford’s Seedling, end of Sept.</td>
</tr>
<tr>
<td>Yellow Ischia</td>
<td>Black Providence, beginning of Oct.</td>
</tr>
<tr>
<td>Gentile</td>
<td>White Malta, middle of Oct.</td>
</tr>
</tbody>
</table>

The most approved methods of propagating fig-trees are either by layers or cuttings, and the former method is generally preferred, because the plants at the end of the season are stronger and more fit to be planted out where they are intended to grow. Trees raised from layers generally come into bearing the second year. Grafting succeeds upon these trees as well as upon any other, but it is almost unnecessary and seldom practised. Before the trees are planted the ground should be well drained, and made from two feet and a half to three feet deep, with a mixture of good friable loam and decayed dung. Miller remarks, that 'fig trees bear the greatest quantity only to be removed: fruits men growing upon clayly land where there has been a foot or more of a gentle leamy soil on the top.'

It was generally believed until a few years back that pruning was injurious to the fig, but experience shows this to be injurious to it and that it is as tractable in this respect as any other tree.

The object to be always kept in view is to have constantly a supply of fruit-bearing shoots, and for this purpose the old wood should be gradually cut away, and the young introduced to fill the excellence of the season. Since the climate of this country will not admit of two crops in one year being brought to maturity, as in other countries more favourable to its growth, the fruit formed after Midsummer should be removed, in order to strengthen the tree and render it more productive the following year.

Several modes of training are practised and recommended: some gardeners recommend the fan system, others the horizontal; but this must depend entirely upon the growth of the tree: if it be luxuriant the latter may be practised; if not, the former will be the more judicious. A tree is trained the stronger it grows, and a contrary effect is produced by horizontal training. Mr. Knight recommends the branches to be trained in a downward direction as well as horizontally, and says, 'The young shoots cease to fill the excellence of the season, and therefore acquire perfect maturity, and by being trained close to the wall it is not so liable to be injured by frost.'

In many parts of the continent where the winter is very cold, but where the summer heat is sufficient to ripen the fig as a standard, the trees are planted in rows and bent down near the ground in winter, and then covered with leaves, which protect them from very severe frosts. Wall-trees are unattended and bent down on each side to within a few feet of the ground, and then protected in the same way as standards.

In this country the common practice is to stick yews, spruce-fir branches, or fern leaves amongst the branches of the fig upon the wall. Where any thing can be used for protection which can contribute to the safety of the fruit in mild weather, it will be found of greater utility than having the branches covered up from the commencement of winter until the end of spring.

When the trees are planted in the border of a hot-house for the purpose of protection, they are commonly trained to trellises; and the treatment is precisely the same as that recommended for open walls. After the fruiting season the border must be kept perfectly dry, in order that the trees may enjoy a season of rest; but a plentiful supply of water is given when they are in a state of growth.

Those who have not a house which can be appropriated entirely to the forcing of figs may nevertheless obtain good crops by planting the trees in pots and forcing them in a cherry-house, peach-house, or vineyard.

The time for beginning to force is from December to February, according as the fruit is wanted; and the tem-
perature should gradually increase from 50° to 65° or 70° Fahr. Some also approve of a bottom heat, and recommend the pots to be plunged in a bed of leaves or tan.

The fig-tree is very apt to throw off its fruit before it ripens, and various methods have been suggested to prevent this. In the Levant, to ensure a crop, a process termed capriphation is resorted to, which consists in placing among the cultivated figs branches of the wild fig, in which a kind of Cynips-abeants. This insect, issuing from the wild fruit, early in the season, does no harm about the pollens in the inside, and so fertilizes the fruit. Or those figs that drop prematurely are Chiefly filled with male flowers are preserved and introduced among the green growing figs with a view to their pollen being carried back among the female flowers, so that the order of this country excepting the shrub itself sometimes, and this is said to be attended with beneficial consequences. (See Hort. Trans., vol. 1, new ser., p. 328.)

PRINCIPLES. LOC.

FIGUERAS. [Catalonia, p. 362.]

FIGULUS. [Cheelee, vol. viii., p. 145.]

FIGURATE NUMBERS. [Numbers, Figurats, and Polvgoenl.]

FIGURE (Geometry), a finite space, which has a boundary in every direction. The figure of a space is the notion we receive from observing its boundary.

FIGURE OF THE EARTH. [Geodesy.]

FIGURED BASE, in music, is a line, or staff, written in a manner which is not usual, or which is placed figure, representing certain chords. This is commonly called the

Thorough Base. [Thorough Base.]

The Figured Base is fallen into disuse; though we are strongly of opinion that it might still be most beneficially employed in emergencies. But in a piano-forte or organ part, when the harmony, or accompaniment is given fully in the treble staff, figures are not only supernumerous, but perplexing and incorrect.

FILAMENT. [Aster.]

FILICRIS, or LIGNANO, was born at Naples in 1752, of a noble family. In his early youth he did not exhibit any signs of extraordinary talent, but after being put under the care of Monsignor de Luca, bishop of Tronto, he made rapid progress in the classical language, mathematics, and philosophy. In 1769, an official administration was determined on by the ministers of King Ferdinand, by which the judges of the various courts were in future to explain the grounds of their decisions by referring to some existing law applicable to each respective case. Such a law was found in the work printed in the judicial administration, which enforced its decree regardless of the clamours of the interested party. Those were times of useful reforms and enlightened administration at Naples, when Genovesi, Diacono, Galliano, Pulvini, Gimini, and other learned men were encouraged in suggesting amendments, which were at least in part acted upon. [Ferdinand iv. of Naples.]

In 1785, Figliaroni, then 28 years of age, published the first volume of his great work, "Scienza della Legislazione:occo the three technical terms filbert, nut and filbert are almost synonymous terms, excepting that the wild uncultivated fruit, and those varieties which most nearly approach it, are never called filberts. The following is the full form:--

Frizzled filbert, excellent bearer.

Red filbert, [had bearers.]

White filbert.

Corylus (Pearson's Proifice, Hort. Sor. Cult.), a very prolific kind.

Bond-nut.

Cosford.

Large square Downton.

Small square Downton, Lincolnshire, produce.

According to the most skilful cultivators, the soil on which the filbert succeeds best should consist of a heavy loam of some depth, upon a dry subsoil, but as this is not always found convenient, it should be remarked that it is not essential to the growth of the filbert, and some even recommend a dry poor soil. The ground should be freely dredged (at least once in two years), and a small quantity of manure given; wooden rags are often used for this purpose with the greatest success, but manure of any kind will be found beneficial.
Filberts are most successfully propagated by layers or suckers. The layering should be performed in the earlier part of the season, in order that the plants may be well rooted, and ready to plant either in a nursery, or where they are intended to remain, in the autumn. When they are raised from suckers, these are generally taken from the parent plant in the end of the season, and subjected to the same treatment as layers. If it be desirable that the trees should be dwarf, layering and grafting are recommended; but if strong plants are wanted, they are raised from suckers: it is then advisable to transplant the young plants in the autumn.

The method of pruning depends in a great measure upon the object the cultivator has in view: if dwarf trees are wanted, the layer or sucker is shortened to about one foot and a half or two feet; if what is termed riders be desired, the terminal shoot is allowed to remain and is cut back to within three or four inches of the ground, and the side shoots are cut to a length of about a foot. The method of pruning, which gives the best results, is that in which the young trees’ branches, annually, short twigs of six or nine inches in length, which generally bear a great many nuts the following year; these should be thinned out, but not shortened, leaving them to continue quite as they are until they are cut clean out the following winter, and leaving others in the same manner as those bad been left the previous season. (Linley’s Guide, &c.)

About Maidstone, and other parts of Kent, the management of the filbert is better understood than in any other part of this country; and as the soil and other circumstances seem to suit its growth, immense quantities are grown for the London market. That part of Kent where the filbert is chiefly cultivated is a loam upon a dry sandy rock. The trees should be grown in open ground, with the twigs where they are to remain, whether they are intended for a garden or a larger plantation; and after being suffered to grow without restraint for three or four years, to cut them down within a few inches of the ground. From the remaining part of the tree, more root and soil, five or six strong shoots will be produced. In the second year after cutting down, these shoots are shortened; generally one-third is taken off, and that they may appear regular, a small hoop is placed within the branches, to which the shoots are tied. By this means, considerable advantages are gained, the trees grow more regular, and the middle of each is kept hollow so as to admit the influence of the sun and air: but this in a large plantation would be almost impossible, nor indeed is it necessary when they are used for dressings, when they are very neatness is almost essential, it ought to be practised. In the third year a shoot will spring from each bud; these are suffered to grow till the following autumn, or fourth year, when they are cut off nearly close to the original stem, and the leading shoot of the last year shortened two-thirds. In the fifth year several small shoots will arise from the base of the side-branches which were cut off the preceding year; these are produced from small buds, and would not have been emitted had not the branches on which they are situated been removed, the nourishment being carried to the upper part of the branch.

It is from these shoots that fruit is to be expected. These productive shoots will in a few years become very numerous, and many of them must be taken off, particularly the strongest, in order to encourage the production of the smaller ones; for those of the former year become so exhausted, that they generally decay; but whether decayed or not, they are always cut out by the pruner, and a fresh supply must therefore be provided to produce the fruit in the following year. The fruited shoots are generally short ened two-thirds, or more, should the tree be weak; and the whole height of the branches is not allowed to exceed six feet. Every shoot that is left to produce fruit should also be tipped, which prevents the shoots being too tough and hard at the end of the branch. It frequently happens that a strong shoot springs from the root; and should any of the first year’s or leading branches be decayed, or become unproductive of bearing wood, it will be advisable to cut that entirely away, and suffer the new shoot to supply its place, which afterwards is to be treated in the same way as is recommended for the others. (Horl. Trans. vol. iv.)

Such, according to Mr. Williamson, is the method of cultivating the filbert in the far-famed grounds of Kent, by which which three hundred trees are grown in particular lands: at the same time he acknowledges that failures are by no means unfrequent, but he attributes this to the excessive productiveness of successful years.

The filbert is a monocious plant, having its male organs in one flower and its female in another; and one modern writer, suspecting a want of male blossoms to be the cause of failure in particular seasons, suspended a quantity of the stamens of the common hazel over the female blossoms of some of his filberts, the result of which was a greater quantity of fruit than that which falls without any such precaution. He then tried some with, and others without, the male flowers, when the former bore fruit, and the latter proved abortive, as he had anticipated. He therefore recommends unpruned hazels to be planted among the cultivated filberts, in order that impregnation may take place.

Great quantities of filberts are rendered useless by being attacked by the nut-weevil (Balaninus nucum), which perforates the nut in its young state, and deposits its egg: in a few days the maggot is hatched, and then feeds upon the kernel. Some are recommended the time of the year’s half or July, as this is the time when the insect makes its appearance, but no remedy is known which can be said to be effectual.

In order to preserve filberts in a fresh and plump state, it is only necessary to prevent their parting with their moisture by evaporation. Burying them in heaps in the earth, putting them in earthen jars in a wine-cellar, covering them with dry sand, are all very good plans, and many cultivators equally efficient will suggest themselves.

FILLET. [Chem. &c.]

FILLET, a flat rectangular moulding, of very frequent occurrence in architecture. It is used to terminate or divide other mouldings, as in the cavetto, which is surmounted with a fillet. Occasionally two of them, which are divided by a fillet. The fillet is more used in entablatures. [Column.]

FILTER, a strainer used in chemical operations for the purpose of rendering fluids transparent by separating the suspended impurities which make them turbid, or for the still more important use of separating, collecting, and washing the precipitates or insoluble compounds resulting from chemical research and analysis.

Filters are usually made of unsized or blotting paper: and are used over an inverted cloche or chimney placed on a wooden-frame, for larger operations, or folded and placed in funnels, and having consequently the form of an inverted cone.

Filters are either single or double: the former are usually sufficient for removing fluids clear, but when the insoluble matter is to be preserved, double filters of equal weight are used; in this case, as it is always difficult and often impossible to remove the whole of the solid matter from the inner filter, the outer one, having been subjected to the action of the same fluid serves as a counterpoise to determine the weight of matter remaining on the inner filter when both have been dried.

In other cases a single weighed filter is used, and then the contained inseparable matter being heated to redness in the air with the filter in a crucible, so as to destroy the carbonaceous matter of the paper, the quantity of earthy impurity remaining with the product is determined by burning an equal weight of similar paper. For the numerous precautions required in this process, see Faraday’s Chemical Manipulation and Berzelius’s Traité de Chimie.

Within a few years various filters have been very usefully employed for the purpose of filtering water either for drinking or culinary purposes. These filters, though varying somewhat in construction, are essentially composed of sand and pebbles placed one above the other. It is well known that the Thames water, though it contains but little saline matter in solution, is frequently turbid, owing to mechanical admixture of earthy matter, which the filters in question are recommended to remove, so as to render the water, not only more agreeable as spring-water for drinking on account of its flatness, yet well adapted for other purposes, especially making tea and other similar uses.
FIN

[QUISEX.-] [1845.

FIN. [Fines.] FINCH. [BELLFINCH.

FIDMBRIA (Zoolody). [VENEREIS.

FiN. [Fines.] FINCH. [BELLFINCH.

FINE OF LANDS, one of the modes of conveying lands and hereditaments by instrument of record. It was so called because it put an end not only to the actual suit of which it was the occasion, but also to all other suits and controversies concerning the same matter. Divested of its technicalities, a fine may be described to be an amicable composition or agreement of a suit, either actual or fictitious, by leave of the king or his justices, whereby the lands in question, or any part thereof, are acknowledged to be, the right of one of the parties.

This mode of conveyance, which was in use from the earliest periods of English history of which we possess any authentic judicial records, became by recent and very recent authorities, and was by the rules by which it was governed, a very considerable branch of real property law, and it is therefore desirable briefly to describe its nature and effect. Fines were of four kinds—1. A fine for possession or a fine de droit, as is also called the de jure. i.e., upon acknowledgment of the right of the cognizor, as that which he or any of the parties to the finer held of the gift of the cognizor (the other party to the fine).

This was the best and surest kind of fine, for thereby the cognizor acknowledged his possession of the lands, and the deforciuit kept the cognizee out of possession, in order to make good his covenant with the cognizee (the plaintiff), of conveying to him the lands in question, and at the same time to avoid the formality of an actual feoffment and livery, acknowledged in court a former feoffment, or gift in possession, to have been made by him to the plaintiff. This fine is therefore said to have been a feoffment of record, the livery thus acknowledged in court being equivalent to an actual livery; so that this conveyance was rather a confers of a right than an actual conveyance; therefore it is said to have been a fine morally. 2. A fine, sur consistance de droit tauten, or upon the acknowledgment of the right merely; and not with the circumstance of a preceding gift from the cognizor. This was commonly used to pass a reversionary interest, for if such there could be no feoffment with livery supposed, as the possession during the preceding, or as it is technically called, particular estate belonged to a third person. [PROFESSION.] This kind of fine was said in this manner, "that the cognizor acknowledges the right to be freely conveyed, and grants for himself, the reversion after the particular estate determines, shall go to the cognizee." 3. A fine, sur consequit, which was the cognizor, in order to make an end of disputes, though he acknowledged no precedent right, yet granted to the cognizee into the possession, for years, by way of supposed composition. And this might be done reserving a rent or the like, for it operated as a new grant. 4. A fine, sur done, grant, et render, which was a double fine, comprehended the fine, sur consistance de droit come coe, &c. and the fine, sur consequit. This might be used to create particular limitations of estate, whereas the fine, sur consistance de droit come coe, &c., conveyed nothing but an absolute estate of inheritance or at least of feoffable.

In this last species of fine, the cognizor, after the right was acknowledged to be in him, granted back again, or restored to the cognizor, or perhaps to a stranger, some other estate in the premises. But in general, the first species of fine, sur consistance de droit come coe, &c., was the most used, as it conveyed a clear and absolute feoffable, and gave the cognizee the benefit of the law, without any actual livery, and it was therefore called a fine executed, whereas the others were executory.

Fines of all four kinds were thus levied, to use the technical term,—First, the party to whom the land was to be conveyed, by giving notice to the other party who was to convey, by signing a writ or precept, called a writ of conveyance. The action was founded upon the breach of a supposed agreement or covenant, that the one should convey the land to the other. On this writ, a fine, called a prisoner fine, amounting to about one-twentieth of the annual value of the land, became due to the king.

The suit being thus commenced, then followed.—Secondly, the evidences considerable, or to leave to compromise the suit, with which another fine was called the king's silver, sometimes the post fine, became due to the king, amounting to about three-twentieths of the annual value of the land. Thirdly, came the concord or agreement itself, which was required to be made either openly in the Court of Common Pleas, or by writing in the land-office. If a married woman was co-ignizor she was privately examined by the parties before whom her acknowledgment was taken, whether she did so freely and willingly, or by compulsion of her husband. A fine was the only way in which a married woman could convey her freehold interest in lands.

By or of this act, the essential parts of the fine were completed, and even if the cognizor died, still the fine might be carried on in all its remaining parts, of which the next was—Fourthly, the note of the fine, which was simply an acknowledgment of the writ of conveyance and the concord, naming the parties, the lands of late land, and the concord, for the purpose of enrolment of record in the proper office.

The Fifth and last part was the last of the fine, which included the whole matter, revising the parties, day, year, and time, of the proceedings, and the acknowledgment of the cognizor, or this indentures were made or engrossed at the charter officer's office, and delivered to the cognizor and the cognizee, usually beginning thus: 'have est finis concordia? this is the final agreement;' and then reading the whole proceedings. The note of the fine was read four times openly in the Court of Common Pleas, or as it was called, proclaimed, once in the term in which it was made, and once in each of the three succeeding terms, during which all pleas ceased, and the suit was removed upon the record. All of the fines levied in each county in every term was entered in some open part of the Court of Common Pleas all the next term, and a copy of the same was given to the sheriff of every county, who at the next assizes fixed the same in the pipe for the public record for the more public notoriety.

(2 Bl. Com. 343.)

Of the effect of a Fine.—A fine was a conveyance so effectual that it bound not only those who were parties and privies to the fine, but all other persons whatever, unless they brought their actions of suit, and the suit continued for years after proclamation made, except marriage infants, prisoners, persons beyond the seas, and such as were not of whole mind, who had five years allowed to them and their heirs after the death of their husbands, their attention for the disposal of their lands, and their benefit. If any of these persons died, or if the husband was restored to his right mind. Persons also who had not a present, but a future interest only, as those in reversion or remainder, had five years allowed them to claim in from the time their right accrued by the statute.

Henry IV. 1. 1441. In order to make a fine of any avail at all, it was necessary that the parties should have some interest or estate of freehold in the lands to be affected by it. (2 Bl. Com. 354.) But it was not necessary that the freehold should be in either of the parties by right, and therefore when a fine was levied to strengthen a title, it was frequently considered necessary to make a feoffment, in order that the freehold might be in one of them by descent. (PROFESSION.) If neither of the parties had any interest at the time, although the fine had no precedent real estate, it was thought sufficient to make effect as between them by way of estoppel. (ESTOPPEL.) A fine was principally used as the mode of conveying the estates of married women, and renouncing their right to dower, as a means of barring estates tail, and remainders that were in the hand of their husbands, who was granted the benefit of the law, without any actual livery, and for the purpose of strengthening defective titles.

By the 3rd and 4th Will. IV. c. 74, fines are abolished, and provision is made for the conveyance of the interests of married women in land, with the concurrence of their husbands, by a declaration of gift in writing, and the same may be made voluntarily, by a deed to be acknowledged in the Court of Common Pleas; and provision is also made for the barring of estates tail by a deed enrolled: but no provision is made for enabling parties whose titles are defective to strengthen them by any means analogous to a fine and monochain. (2 Bl. Com.; Crus On Fines.)
FINISHER, a department at the western extremity of France, comprehending a part of the former duky of Brittany, in form, nearly resembling the Welsh county of Pembroke; the inlets of Brest Water, and the Bay of Douarnenez, occupying the same relative position in one that St. Bride’s Bay does in the other. It is washed on the northern, western, and southern sides, by the Atlantic ocean; and bounded on the eastern side by the departments of Côtes du Nord and Morbihan. The largest length is from the north-west coast, between the villages of Argenton and Kersaun, to the mouth of the river Quimperlé, 78 miles; the greatest breadth at right angles to the length, from the extreme north of the department, to the mouth of the Douron, 62 miles. The area of the department is about 2676 square miles, being about an eighth larger than the average of the French departments, and rather larger than the English county of Lincoln. The population in 1832 was 512,396, about one-tenth of the number in the department, and that of the English county of Lincoln. Several of its rivers, and on almost every side of it are immemorial islands and rocks. On the north side are the Ile de Bas, the Iles de Meloine, Los Caderos, and others; on the south side the Ile de Glenan, Les Poucres, the Ile aux Moutons, and others; and on the west a group of great rocks. The soil is always fertile, and the Ile d’Ouessant (or, as it is frequently called by English writers, Ushant), Balanç, Mélène, Quennénez, and several others: this group is separated by the Passage de Four from the headland on the northern side of Brest Water. The Ile de Sein is also on the western coast of the department, and is separated by the Passage du Raz from the Bec du Raz on the southern side of the bay of Douarnenez. There are some others, very small. The Ile de Bas has been noticed already. [Bas, Il. E. R. E.] Ouessant is known to the Romans by the name Uxantis or Axiants. The other islands do not require notice. The chief rivers and inlets on the coast of the department are those of Brest Water, which is about 60 miles long, and of the Pointe St. Mathieu; of Dinant; of Douarnenez, at the extremities of which are the Bec de Chèvre and the Bec du Raz; of Audinore, at the extremities of which are the Pointe de Begadan and the Cap de Audinore, at the extremities of which are the Pointe Enzian and Pointe Labert; and of Forest. The headlands, Pointe Tregnon, Pointe de Becbo, Pointe Douelan, and Pointe Poullo, are on the south coast of the department.

There are two principal ranges of hills in the department; the one is the Great Range, which runs mostly north and south, and has its extremity at the head of the water of Brest and south of the bay of Douarnenez, and runs eastward into the department of Côtes du Nord, in which their ridges unite: the northern range is known as the Monts d’Arrée, and the southern range as the Monts de Nores (the Black Mountains): they inclose between them the basin of the Aulne, the most considerable river of the department. These mountains consist of granite of various kinds: the most common is coarse-grained, and is composed of mica, quartz, and felspar. The outline of the hills is picturesque, but their elevation is not great, they rarely exceed 900 feet. From the proximity of the mountains to the sea, the streams which rise on their slopes have a very rapid course. The following run into the sea on the northern coast, ranging from east to west—the Douron, which in the lower part of its course forms the boundary between this department and that of Côtes du Nord; the Oustre; the Reïs, which receives the Jarlo; the Pènez; and the Aber-Benoist, which receives the Leuhan: on the west coast, ranging from north to south, are the Aher Idul; the Ellor or Landernau, about 30 miles long, for seven or eight of which (viz., up to Landernau) it is navigable; and the Aulne or Châteauric, of which below: of the inlets of Brest Water, those which extend into the sea the most, are the Odet, 33 miles long, navigable to Quimperlé, 10 or 12 miles above its mouth; the Boëton; and the Ellé, about 33 miles long, which rises in the department of Morbihan, and receives the Issk or Isle from the junction of this stream the river assumes the designation of Quimperlé. The Aulne, the only one of these rivers that requires particular notice, rises on the southern slope of the Monts d’Arrée, near the boundary of the department, and flowing southward for 34 miles, receives the Hieré, nearly 30 miles long, from the opposite slope of the Monts d’Arrée, and then, as it flows westwards, is divided by the Châteauneuf du Fau to Châteauric, 26 or 28 miles, and then becoming navigable, flows west-north-west about 12 miles into Brest Water; its whole course is from 62 to 64 miles long. The Hiré, which also flows from the slopes of the Monts d’Arrée, is of small size which joins it on the left hand; on the right bank it receives the Elez, the Geans, and the Doufune, all from the slopes of the Monts d’Arrée. There are many smaller streams, and a considerable number of small lakes and ponds, and every side of it are immemorial islands and rocks. The climate of the department is cold and foggy: the quantity of rain which falls is very great. In some parts, on the coasts and on the hills, the winds, which blow chiefly from the west, the north-west, and the south-west, are very tempestuous. The coast is washed by the Ile d’Ouessant (or, as it is frequently called by English writers, Ushant), Balanç, Mélène, Quennénez, and several others: this group is separated by the Passage de Four from the headland on the northern side of Brest Water. The Ile de Sein is also on the western coast of the department, and is separated by the Passage du Raz from the Bec du Raz on the southern side of the bay of Douarnenez. There are some others, very small. The Ile de Bas has been noticed already. [Bas, Il. E. R. E.] Ouessant is known to the Romans by the name Uxantis or Axiants. The other islands do not require notice. The chief rivers and inlets on the coast of the department are those of Brest Water, which is about 60 miles long, and of the Pointe St. Mathieu; of Dinant; of Douarnenez, at the extremities of which are the Bec de Chèvre and the Bec du Raz; of Audinore, at the extremities of which are the Pointe de Begadan and the Cap de Audinore, at the extremities of which are the Pointe Enzian and Pointe Labert; and of Forest. The headlands, Pointe Tregnon, Pointe de Becbo, Pointe Douelan, and Pointe Poullo, are on the south coast of the department.

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and Odet, are favourable to commerce. A canal from Nantes to Brest is in progress, if it is not completed; it enters the department on the east side, and follows the valley of the Aulne, which river it joins at or near Châteaulin. The high road from Brest to the east enters the department on the north-east side, and runs through Morlaix, Landivisiau, and Landernen: this is the only road of the first class. A road of the third class enters the department on the east side near Carhaix, from which town it runs northward to Morlaix and St. Pol de Léon, one north-westward to Landernan and Lesneven, and one south-east into the department of Morbihan; another road of the same class enters the department on the east side near Quimperlé, and runs through Brest town.

There is a small place in a pleasant situation; it is divided into parts by the Aulne, over which there is a bridge: the navigation of the river begins here. The principal trade of the inhabitants is in slates, some of which are exported to foreign parts, and in salmon, of which a vast quantity is caught and sent into the neighbouring departments and even to Paris. There are some ebbing and flowing wells in the neighbourhood of this town. Carhaix appears to have existed in the Roman times, and to have been the Vorginium of Poelem and the Vorium of the Theodosian table, the chief town of the Osismi; it is supposed to have been ruined by the Normans in the ninth century. It was the birth-place of Theophile Malo La Tour d'Auvergue, a descedant of Turenne, a warrior and an antiquarian of considerable celebrity. He was the son of a seaman, and was born in the little lead mine which furnishes employment to 280 workmen, and produces yearly 370,000 killograms of lead ore and 300 killograms of silver. The kilometer is equal to rather more than 210 yards. Poulhounen is between Huelgoet and Carhaix.

In the arrondissement of Quimperlé are Douarnenez on the bay of that name; Audierne on the bay of Audierne, and Pont Croix near it; Pont l'Abbé, (population of town 2,590, (population of commune 4,515,) near the bay of Brest; Camaret, near the coast.

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of which is a suffragan of the Archbishop of Tours. It is in the jurisdiction of the Cour Royale or High Court of Justice of Rennes, and in the circuit of the Académie Universitaire or Educational Board of that city. It is comprised between 90° and 300 feet above sea-level, and varies from 8 to 10 feet in depth; it falls into the Gulf of Finland near Kymmenegard, but, owing to the frequent falls, is not navigable. The Kuyomoy flows from a lake still more to the west, and falls into the Gulf of Bothnia near Börneberg. The Yama, an outlet of Lake Yänisjärvi, flows into Lake Ladoga. The Sestra is the boundary between the governments of Finland and St. Petersburg; the Torons and Muonio separate Finland from Sweden, and the Tana-elv divides it from Norway. The line of the Tana-elv is first from south-west to east, then in a south-easterly direction to the Gulf of Finland border and flows through Finmark in Norway north-east by the Tana-ford.

The waters of Finland and its numberless swamps and moors occupy more than a third of its surface; but the climate is on the whole healthy, and of great longevity. The average duration of the summer, which is accompanied by great heat, is not more than three months; the winter, which lasts from seven to eight, is exceedingly severe, particularly in the north. During the latter season there is a direct road across the frozen Gulf of Bothnia to Sweden. In the northern parts of Russian Lapland the sun disappears entirely from the end of November to the close of January; an interval which the people term "skabomo," an abomination; but during which the moon and stars are never seen to disappear for the twenty-four hours. The climate is less severe in the central and southern parts, but thick cold fogs are common.

There are extensive forests of firs and pines in the south, interspersed with oaks, elms, &c. both on the mainland and the islands. The principal swamps and moors, which cover about one-third of the country, are filled with the soils which receive the exhalation from the lakes and swamps. In northern Lapland these trees are replaced by the birch, until, in the coldest districts, trees cease altogether. The mountains and hills are in general naked; in the even where they are wooded, the wood is low and stunted.

The greater portion of the soil is either stony or sandy, Rich vegetable earth is of rare occurrence, and scarcely ever mixed with sand. In order to secure his land, the agriculturist is in the habit of setting fire to his forest or underwood. By this means he is enabled to grow his eye or oats for two or three years in succession, after which he plants the ground asphens and lets it lie for twenty or thirty years, until the wood is sufficient for another burning. By this process, prolonged for a century, the rate of production of the soil of Finland is rendered capable of producing grain adequate to its consumption in common years, and more than adequate in favourable seasons. There was a time, indeed, when it was believed that the proposed agricultural reform, which was further back than the year 1795, its export of grain amounted to 50,000 quarters. Nyland and the south-western districts of Finland raise the largest quantities; Wiborg does not, one year with another, produce sufficient for its own consumption. Bukey and rye are the chief corned crops; those are often sown the year after the land has borne rye; a little wheat is raised; and grey peas and beans in Wiborg, S. Michael, and Tyrusheus. This frost, however, sets in so soon and the weather is so uncertain, that it is commonly

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and active. Fowl and other wild game are plentiful. Bears, elks, wolves, foxes, martens, &c. afford a large supply of fur and skins. Reindeers abound in all parts of northern Finland, the stock in the district of Kuusamo alone is 12,000 heads; and in that of Ulojoki, in northern Lapland, it is 45,000. These animals, in their natural state, supply them with food, clothing, and other necessaries, as well as the means of barter for his principal luxuries, brandy and tobacco; nor is he burdened with taxes, as he be owner of about 250 in Lappland.

The chief food of the Laplander, whose streams, such as the Torne and Tana, are well provided with salmon, pike, a kind of eels, red-reyes, &c. The pearl musle is found in some of the lakes and rivulets of the western parts.

Finland has few mineral products. Bog iron is obtained in some parts, and converted to domestic use: lead is also found, and a little copper here and there, but neither in large quantity. Marble is quarried in the district of Kauniainen, south of the lake Lugaale. Slate is plentiful, and chalk abounds in some places. The want of salt is severely felt, and the attempts made to extract it from salt water have not been attended with much success.

The whole agricultural produce of Finland does not exceed 12,000 pecks, or about 420 tons.

The majority of the population is of Finnish extraction. The Finns call themselves ‘Samo&omicron;iata’ or ‘Suomuss,’ but they are denominated ‘Schi-ludes’ by the Russians: they are about 500,000 in number, but possess no constant, temperate industries: their complexion is dark, their countenance and manner are serious, and they are well knit, and of a robust make. They are all free, and many of them are landholders. A great number have leases of the crown, and hold their farms, for life, with a privilege in some cases of bequeathing them to their children. Their dwellings, called ‘Poceto,’ are low, dark, and uncheated, and built of wood. The Laplander is of the same extraction as the Finlander, and calls himself a ‘Samo-il&omicron;orta’ or ‘Samo-kiat.’ These are derived from a name in Russian, the name given to him by the Swedes, which signifies a coward, scur, magician, or poisoner. They resemble the Finlanders in all respects except that the upper jaw projects more, and their hair is of a deeper tint. There are not many thousands of them in this government; they lead a wandering life, and are divided into two classes, the reindeer Laplanders and the fishing Laplanders. Numbers of Russians and some Swedes have settled in the districts of Viborg and Keskijärvi, as well as in the Finland towns.

The consular report for the civil population gives the number of births in 1822 as 92,894, and in 1823 as 94,916; the deaths in 1822 were 33,353, and in 1823 29,578; and the marriages in 1822 were 9999, and in 1823 10,764. In the five years’ interval from 1815 to 1820 the excess of births over deaths in this province, which gives the natural increase, amounted to 16,317. Finland contains 25 towns, 1504 villages, and 28,735 homesteads, habitations, and out-houses. All the inhabitants, except the Russians, profess the Lutheran faith. Finland Proper is divided into two dioceses, Abu and Viborg (dioceses of Uleaborg and Borgo) with 7. The followers of the Greek ritual are under the archimandrite of St. Petersburg. The university of Abu has been transferred to Helsingfors since the year 1827. There are grammar schools in Viborg, Abu, and Borgo, and inferior schools in other parts. The number of schoolchildren is not widely extended, and the proportion of schoolers to the general population was not more than 1 in 109 about four years ago.

Agrie culture, the breeding of cattle, and in some parts, the fisheries, constitute the principal occupations of the people. There are few manufactures except in the large towns, and these are principally of iron ware, sailcloth, and stockings. The peasantry make what coarse woolen and linen they wear, and their own roots; they also prepare tar, pitch, and charcoal, make their own gunpowder, and for exportation, and in some of the ports vessels are constructed. Navigation is much impeded by the severity of the winter, which shuts the harbours from six to eight months in the year. The amount of trade in foreign is about 250,000 annually in imports and 200,000 in exports; the latter consisting principally in the supply of St. Petersburg, by the channel of Lake Ladoga and the gulf of Finland, with timber, meat, butter, skins, for fish, &c. The same articles are likewise exported to Sweden. Salt is a great article of import.

There is a distinct establishment at St. Petersburg for the government of this vast province or principality. The governor-general, who resides at Viborg, exercises authority through his adherents. Though Finland has a constitution of its own, by which the inhabitants are classed in four orders, the diets are never convoked, except on the occasion of additional taxes being contemplated by the government. The senate of the nobles has been found convenient body to manage than the diets, and it has since superseded them.

In the year 1821 the principality was re-organized into eight circles or ‘Loets,’ at the head of each of which there is a governor-general called ‘Abo-Biornberg,’ each circle of the gulf of Finland, is well fortified, consists of the main town and two suburbs united by a wooden bridge to the land on which the castle stands, and has an elegant church, called ‘Helsingfors,’ and another for the Finlanders, a Roman Catholic chapel, a district school, besides other schools, and about 4000 inhabitants.

In this circle is Fredericham, a hamlet on the bay of Finland, a strong fortress, containing about 2000 inhabitants: it was here that the treaty of September, 1809, was concluded, by which Sweden made over Finland with part of Lapland and the Aband Islands to Russia. St. Michael, north-west of the preceding circle, contains St. Michael, a small town, and Nyholmen, another small town, which is supposed to be the ancient capital of the Lapps, Ithor. Helsingfors, the capital of the principality, on a tongue of land in the gulf of Finland, with about 10,000 inhabitants, and the strong fortress of Swelwar, at the entrance of the harbour. North of this place lies Borgo or Borgo, a small town on the river of the same name, with a cathedral, a church, gymnasium, manufactures of linen, s&aelig;ttb, refined sugar, and tobacco, and about 2500 inhabitants. Loiswar, formerly Degub, north-east of Borgo, is a small town, with two churches, and about 3000 inhabitants. The circle of Viborg, which extends to the northern limits, contains Tartu, lying on a lake, with a strong castle, a church, and about 1700 inhabitants. Abu-Biornberg, the westernmost circle of Finland, includes the islands of Aband in the gulf of Bothnia; its capital is Abu, Obo, or Tupu, and contains about 1000 inhabitants. These inhabitants, in this circle are also Biornberg, near the mouth of the Kemioki, a maritime town of about 4000 inhabitants, well built, with a church, grammar school, and boat manufactory and trade. Rauno, a town with 1700 inhabitants, and Nydal, a village of about 1600, where the trade by which Sweden relinquished the Baltic provinces and part of Finland to Russia in August, 1721, was concluded.

North of this circle is that of Oasa, on the gulf of Bothnia. Its capital is Oasa, on the gulf of Bothnia, a regularly built town, with a church, market-places, two large public inns, and about 600 houses and 3300 inhabitants. South of Oasa lies Christiani&aelig;astad, a good seaport on a peninsula, with a church, about 1200 inhabitants, and much trade. Koopu, a circle east of the preceding, contains the town of Koopu, on a promontory of a church, school, well-frequented fairs, and about 1500 inhabitants. The circle of Uleaborg-Kuyana, in the most norther part of the principality, contains Uleaborg, its capital, on the Ulo, a fine river; within 15 miles a small town, with two market-places, a church, and hospital, about 400 houses, and a trade of about 4500, who carry on some trade: Braheda, a seaport, with a church, and about 1200 inhabitants; Padurjovtsi, an inland town of about 1200; Kemfa, a town on the north-eastern extremity of the gulf of Bothnia, a neat town, with two churches, one on an island, and about 700 inhabitants; this place is the centre of the Lapland trade in seals, fish, reindeer-skins, butter, &c.
The Fins differ wholly from the Scalianovians and Livonians. They have an alphabet and language peculiar to themselves. The majority are attached to agricultural pursuits; some few tribes are nomadic, and some devote themselves especially to fur trading and fishing. They are of mixed descent, but of a strong robust make; their characteristic features are a flat face with hollow cheeks, dark grey eyes, and light brownish hair, a thin beard, and sallow complexion. The Tshermens or Tzarimissae and Tsvuks are separate subordinate Votyak families, while the Mandrings and the Voguls to the Calmucks. The Fins are a brave, honest, and hospitable race of men, but headstrong, frequently ferocious, and repulsive in their manners. Some tribes are so indolent that the name of Fin is in many parts synonymous with laziness; they have little activity of mind, and are notorious for their want of cleanliness. They are destitute of the vivacity and social qualities of the Russians, and are serious, reserved, and fond of a retired life.

The Fins are of five exceptions, Christians. The Eastern were converted by their Russian masters to the Greek faith; the Western, who at first embraced the Roman Catholic religion, have mostly followed the example of their former masters, the Swedes, and embraced Protestantism. Among the tribes who adhere still to paganism are the Tshermens, Mandrings, Voguls, and a few others. In point of civilization none are so advanced as the Finns; many possess a natural taste for music and poetry. The Finns are celebrated for their sobriety, and the servant of the crown in high respect. Independently of husbandry, fishing, and the chase, they are in some parts employed in the manufacture of tar, and in building harks and boats. Their dwellings in general are at a distance from one another, and consist of two cabins, one for summer, another for winter, and a third for culinary purposes: these are surrounded by a yard, which also contains a barn and stable or stalls for cattle. Their women are thrifty and much devoted to their domestic duties; they weave coarse cloth for the use of their families, and their winter attire differs little from that of the men.

The Fins are fond of ardent spirits; yet longevity is common among them.

FIRDUSI, ABUL CASIM MANSUR, a celebrated Persian poet, was born at the village of Shirdab, in the district of Tus, in the province of Khorassan. The Persian biographers differ considerably in the date of his birth, some placing it in the beginning and others in the middle of the twelfth century; but according to Firdusi himself mentioned in the last chapter of the 'Shah Nameh' that he completed that work a.d. 1009, and that he was then nearly 80, he must have been born about a.d. 931.

His father was a gardener, and it is said he gave him the management of a beautiful estate of Firdus (i.e. paradise), whence the poet obtained the name of Firdusi; though, according to another account, this name was given

...
to him by Mahmud in consequence of the excellence of his verses.

Firdusi appears to have spent the first fifty years of his life in his native village; till attracted by the encouragement which Mahmud gave to learning and the fine arts, he repaired to his court at Ghazni, where his talents procured him the highest reception. After his accession, Mahmud commanded him to write a history of the kings of Persia in verse, and promised to reward him with a thousand pieces of gold for every thousand couplets. The poet however preferred waiting for his reward till he had finished the work, which was completed after a labour of thirty years, in 60,000 couplets. But instead of receiving the great sum he had anticipated, he was doomed to a cruel disappointment. It appears that he had offended some favourite courtiers, who prejudiced the mind of Mahmud against him, and detoured his life. He was insulted by the suggestion of the prophet by the praises which he had bestowed upon Zorasdust (Zoroaster) in his great poem. Instigated by these calumnies, Mahmud only sent him 60,000 silver dirhems. It is related that Firdusi was in the bath when the ambassador of the sultan arrived at his house, and his name was called to his presence. Firdusi was not at home, and the slave who brought it, added, 'The sultan shall know I did not bestow the labour of thirty years on a work to be rewarded with dirhems. He who was sent to the baths to announce of this to the ambassador, he was sent, not for reward, but to be torn to death by an elephant, and with great difficulty obtained a revocation of the sentence. Feeling that he was no longer safe at Ghazni, he left the city, after having written a bitter satire on Mahmud, which he gave to one of the courtiers, having ordered him to present it to the sultan, which he must not present to his master till several days had elapsed. A translation of this satire is given by Sir William Jones, accompanied with the original Persian, in his Poëseas Asiaeos Commentarii (Works, 9th edition, vol. iii., pp. 182, 183), and also about the Persian in his Traité sur la Poésie Orientale, vol. xii., pp. 242-245.

The accounts given in the Persian biographies of Firdusi, after his departure from Ghazni are vague and unsatisfactory. The reminiscences of his life and the wandering life which he led are not as clear as the story of his birth and the history of his life in the hands of Firdusi the antient chronicles of the kings of Persia, from which it is supposed that he derived the historical narratives extant in his great work. We have the testimony of the book of Ecbatana (x. 2) to the existence of such records as well as a strong presumption derived from the fragments of Ctesias and many parts of Herodotus. But it appears very unlikely that these chronicles should have been preserved for so many ages, considering the many authors who have written Persian history in the Persian and romantic story told in the preface and the edition of the Shah Nameh, published by the command of Bayazir Khan, which, though deserving of little credit, must not be omitted on account of its general currency in the East. It is related that Firdusi, the last of the Persian race, ordered all the chronicles of the kings of Persia to be collected and arranged, and that this book was known by the name of the Bastan Nameh. On the conquest of Persia by the Arabs it was found in the library of the caliph Al-Mamun; a copy of it was given to the Emir of Persia, property of the Ethiopians, by whom it was conveyed to India; it was afterwards taken back again to Persia, where it remained unknown till a fortunate circumstance brought it to light in the reign of Mahmud. Little reliance is to be placed upon the genealogies and the personal history of Firdusi: the only value of the Shah Nameh, in an historical point of view, consists in the antient Persian traditions it has preserved; but it would require the learning and acumen of a critic like Niebuhr to arrive at the historical truth concealed in this composition, and to appreciate the real value of the additions and embellishments of the poet. But it is not as a history that the Shah Nameh derives its reputation. Its poetry is read and admired by all well educated Persians even in the present day; and it may be observed, with the exception of Valmiki and Cidóas, it is written in pure Persian than any other work in the language, and contains a very small number of Arabic words; it has thus become a model of Persian composition, and is as much distinguished in the East as the Homeric poems were in the West.

The copies of the Shah Nameh now met with vary greatly in the number of verses. It would be difficult to discuss them, says Mr. Macan in his preface to the Shah Nameh. Almost all the copies contain 60,000 verses or in the phraseology for 20 couples together. Whole episodes are omitted, verses rejected from every page, and it is not yet uncommon to find MSS. which contain only 40,000 verses. Mr. Macan however observes that the poem is said to have consisted of 60,000 verses. Mr. Macan adds, that he had never seen a MS. with more than 56,000 couplets: the edition published by himself contains only 55,204. There have been three at
and putting this few but the instruments also in Hama, the continuous important given species Twenty-three be sioned (L-scribe volume it a.p. and this cloyment did not produce much benefit, as the copy was deposited in the king's library, to which no one was allowed access. All trace of it has disappeared; the preface alone is extant.

The second collation was made under the superintendence of Dr. Lumsden, professor of Arabic and Persian in the College of Fort William. Twenty-seven valuable MSS. were procured for this purpose; and the first volume containing an eighth part of the work was published at Calcutta in 1813.

3. The third collation was made by Mr. Turner Macan from 17 complete MSS. and four fragments containing the greater part of the work; all of which were written in Persian. The whole of the Shah Nameh was published by him at Calcutta, 1829, in 4 vols. 8vo: this edition was printed at the expense of Nusser-oodeen-Hyder, one of the native princes of Hindustan.

An epitome of the Shah Nameh in Persian made in A.D. 1557, by Shumshir Khan, is widely circulated in the East. There have been had but the early part of the present verse by Mr. James Atkinson, London, 8vo., 1833; the same author had previously published at Calcutta in 1814, the episode of Shahrab in English verse accompanied with the Persian text. The entire poem was translated into Arabic by Omer-Solaiman, the name of the translator being Abu-Fateh-Isa, a native of Isphahan. A small portion of it was published by Wahl in the original Persian with a German translation and many valuable notes in the 5th volume of the Fundgruben des Orientes, Wien, 1816, (pp. 160—131, 233—264, 341—398); which was reprinted by Vullers in a useful work for beginners, entitled Christostomia Schahnamiana, Romae, 1833. The first eight books were translated by Champion in one volume, 4to., 1784; and the whole work was translated into English verse by Stephen Westen, B. D., London, 1815. Former particular of the life of Firdusi will be found in Silvestro de Sacy's translation of his life by Daulet Shah, published in the 4th volume of Notices et Extr. des Manuscrits. (pp. 393—398), and in the preface to the various works quoted above.

FIRE. [HEAT.]

FIRE-ARMS. [ARMS; ARTILLERY.]

FIRE-ENGINE, a term formerly applied to the steam-engine when employed to those machines which are employed to extinguish fires by throwing water from a jet upon the burning materials. When we reflect upon the ravages which fires, whether accidental or kindness or by incendiarists, have occasioned to houses, we may suppose that contrivances more or less appropriate have been at different times devised for extinguishing the flames or preventing them from spreading.

There were various modes of extinguishing fires previous to the invention of the modern fire-engine. A term employed by Junel and Pliny expressive of some implement used in extinguishing fires has given rise to some discussion. This term is Hama, which some commentators describe as a water-vessel; but Holstein contends that it was a very large hock or granule fixed at the end of a long pole. Faccioliti describes the Hama as a vessel used in putting out fires. Junel says in his 14th Satiré, v. 305, &c.

Augustus appointed seven bands of firemen in Rome, each of which had the care of two divisions (regions) of the city: each band had a captain (tribunus); and at the head of the whole body was the prefect of the firemen (Prefectus Vigilum). For further information the Title De Officio Prefecti Vigilum may be consulted. (Dig. l. Tit. 15.)

At the present day a species of squirt is used among oriental nations for extinguishing fires.

With regard to such contrivances as might correctly come under the denomination of machines, it appears that they originated with Ctesibius, a distinguished Greek mechanician, who lived in Egypt in the reign of Ptolemy Philopator (186—245 B.C.). Ctesibius set upon machines connected with pumps of different kinds, and clepsydras, or water-clocks. Hero, a pupil of Ctesibius, describes a sort of forcing-pump with two cylinders, employed for the purpose of extinguishing fires. Apollodorus, architect to the Emperor Trajan, mentions a machine consisting of leathen bottles with pipes attached to them; when the bottle was squeezed, a jet of water flowed through the pipe, and was thus used to extinguish fires. Beckmann has found, in the accounts of many of the German towns, entries for the cost of machines, the existence of which would be very problematical without that evidence; thus, in the building accounts of the city of Augsburg for 1518, fire-engines are mentioned under the name of 'instructum of fire,' or 'water-syringes.'

We have seen an old engraving which purports that Mr. John Lofting, a merchant of London, was the inventor and patentee of the fire-engine. In one corner is represented the Monument, and in another the Royal Exchange. The engravings are rough and unfinished work.

There are two important parts of a fire-engine which do not appear to have been brought into use for some time after such machines became general: we mean the flexible hose, or tube, and the air-chamber. Hautsch's engine, however, possesses the former, but not the latter. One machine of a flexible tube is obvious, for it enables the operator to carry the stream of water in any direction from the engine; whereas without it the sphere of the engine's use is limited, from the impossibility of carrying the engine itself through narrow passages, &c.

The air-chamber is a contrivance which depends for its value on one of the most important laws of pneumatics, viz. the increased elasticity of air when compressed into less than its usual bulk. The manner in which the application of that principle increases the efficacy of the engine, we shall treat of presently; but we may easily illustrate the action of an instrument without such an accomplishment, by reference to a common pump, in which we find the water is raised not by the continuous stream, but gushes forth at intervals every time the piston is raised by the action of the handle. Now it needs but little reflection to conclude that such a mode of projecting water against burning timbers, &c. must be very mediocritius when compared with that of a continuous stream. The addition of an air-chamber, therefore, which had been found of great advantage in different hydraulic machines, was an important improvement in the fire-engine.

It is not exactly known who first applied this improvement, but an engine containing an air-chamber is sited by

* Dispositio predicta Alexei Vigilae cothornum, in the description of the sceleste, L. 1672, Cap. 20, as applied to the electre, aliquine sole, Pyrgaque columnae, Arque above, et inc latissimae.*

In the above passage Junel alludes to the anxiety of the rich, who took precautions to meet the ravages of fire. The opulent Licinius bids his train of servants watch by night, the water-hucksters being set ready—alarmed for his amber, and his statues, and his Pyrgian column, and his ivory and broad tortoise-shell. Pliny the younger speaks of pipes (siphones) being used to put out fires. (lib. ep. x. 42.)
Perrault to have been kept for the protection of the king's library at Paris in 1681. The first introduction of them, however, for common use appears to have occurred about the year 1720, when a mechanic named Leupold constructed engines consisting of a copper box securely closed and well soldered: each one weighed about 16 pounds, and ejected a continuous jet of water at a height of 20 or 30 feet. This engine contained one cylinder and piston. These were later developed by two natives of Holland, both of whom were named Jan Vanderheide, and who were inspectors of fire-engines at Amsterdam in 1672. Five years after the invention, a twenty-five years' patent for the privilege of making those pipes was granted to them; and in 1676 sixty of them were kept in the city, of which six were to be used at each fire.

After the introduction of these engines into England, improvements were from time to time made in them, by Denison, Simkin, Phillips, Furst, Newsham, Rowntree, and others. One improvement in particular was made by Newsham, who was a mechanic of a very considerable character, and in 1710, being 27 years of age, applied for a patent for a water pump, which was granted to him. In a few years after this, he had many orders for his pumps. The annexe figure represents the outward appearance of the engine, such as our readers have doubtless frequently seen.

The body, A, is about 9 feet long and 3 feet broad, including the greater part of the mechanism of the engine. Along the lower part of this runs a metallic pipe, into which the water from the feed-pipe B, which is connected at the other end with a street-pump or a cistern, is supplied. Water cannot be obtained in this way, a cistern, C, is filled by means of buckets, and at the juncture between the cistern and the interior pipe a grating or strainer is placed, to prevent the water from dirt, gravel, &c., with which it may be impure. The water having entered the interior pipe, is elevated and forced into the air-vessel by two pumps contained within the body of the box, D, and from the air-vessel is forced into the pipe P, which is connected with the bellows hose by which the propelled water is directed to the proper point. The two pumps are worked by a double lever connected with two handles, E E E E, which are conveniently placed for being worked by several men, who alternately elevate and depress the end of the lever at which the pumps are fixed. But the handle is so contrived as to be much augmented by one or two men standing on the body of the machine near F, who, holding by the bars G G, and treading alternately on each side of the fulcrum of the lever, on the treadles conveniently arranged for that purpose, greatly increase the upward tendency of other side by throwing the weight of the body on that side. At K is a handle which turns a cock or valve, thereby regulating the supply of water to the interior pipe through the feed-pipe B.

Thus much for the exterior. We will now show the position and action of the air-chamber, and the connexion between it and the pumps; and in doing so we shall confine ourselves to that portion of the interior mechanism which is directly concerned with that part of the process.

This being the relation of the parts to one another, let the reader now suppose the piston E and its rod G to have a reciprocating motion by the action of the men who are pulling the double lever on the outside of the engine, and he will be able to follow the rationale of the process. It must be understood that the piston-rods of the two pumps being connected with opposite sides of the fulcrum of the lever, it necessarily results that when one ascends the other descends, and vice versa. The air-chamber being full of air of the ordinary density of the atmosphere, and the cock I being opened, by which the pipe H becomes filled with water, we will suppose the piston to be drawn up to the top of the pump-linder E. The consequent results are these: the piston draws up with it the air which the cylinder contains, and thus creates a partial vacuum beneath, because all communication with the external air is cut off. The valve between the two pipes having now a stream of water pressing it upwards, while the space above it contains rarefied air only, the valve becomes open, and the pump-barrel F and the pipe D become filled with water. When the returning stroke of the lever forces the piston down to its former position, the water is driven before it, but cannot return to the pipe H, because the valve communicating with the latter opens upwards. It is therefore forced through the other valve into the air-vessel A. At the second upward motion of the piston a partial vacuum is again produced beneath it, but the water now contained in the air-vessel cannot return to fill that vacated space, on account of the mode in which the valve opens. A fresh supply is therefore gained, as before, from the pipe H through the valve communicating with D. This supply is, by the subsequent downward pressure of the piston, forced into the air-vessel B, in the same manner as to the former portion. Thus each successive ascent of the piston causes a rush of water into the pump-barrel, and each descent urges that portion into the air-vessel.

We must now inquire what takes place in the air-vessel into which the water is thus forced. The air in this vessel has no communication with the external atmosphere except through the pipe B C, which is fitted air-tight into the neck of the vessel at B. When the water ascends in this vessel above the bottom of the tube at C, the air above that level becomes compressed into a smaller space, as all escape is guarded against. With this compression its elasticity a
also increased in the same ratio; and the effect of that increase we will now show. In the article Barameter it will be seen that the average pressure of the atmosphere, under ordinary circumstances, is about 15 pounds on the square inch, or 15 lbs. on an area of 144 square inches, or 2033 feet high, or one of mercury 30 inches high; but when, through any external force, the air is compressed to one-half of its former bulk, its elasticity is doubled, or becomes equal to the pressure of 66 feet of water. Now let us suppose that the influx of water into the air-vessel through the valve is such as to condense the air into half its former bulk: the contending forces are these—the air contained in the tube B C is pressing on the surface of the water beneath with a force of one atmosphere, or 15 lbs. on the square inch; while the condensed air, or steam, is exerting a pressure on the water with a force of two atmospheres, or 30 lbs. on the square inch. The latter pressure therefore exceeds the former by 15 lbs. on the square inch, and the water is driven up the tube with a force of that amount, which, as we have said, is sufficient to carry it to a height of about 33 feet. If the condensation of the air be less than the above, the effect will be proportionally diminished; but as long as the density exceeds that of the external air, so long will the water be forced up the tube; and thus a continuous stream is insured, which is the object desired. If the condensation be carried to a greater extent, the height to which the water will be ejected—will increase in the same ratio; so that, if the bulk of the confined air were reduced to one-third, one-fourth, or one-fifth of its original bulk, the ascensional power gained by the steam will be proportionally less for the same feed only.

These are the principles on which all such engines act, although the arrangement of the mechanism may greatly vary. A construction somewhat different has been employed by Mr. Rowntree for the Sun and other fire-engines, in which the steam is used to drive a water-wheel, the power from the feed-pipe is more effectually prevented. Many improvements, more or less valuable, have been suggested and partly acted upon within the last few years. A fire-engine of this description has been patented by Mr. Tilley, of London. Another, which is both efficient and portable, has been made by Mr. Merryweather, and is used principally as a stationary engine for the protection of large buildings. Engines on this construction have been made for the mansions of the dukes of Devonshire, Northumberland, and Rutland. But the most important deviation from the general construction of fire-engines is the steam-engine of Mr. Braithwaite. This was first employed at a fire at the Argyle Rooms, in London, in 1830, and displayed great power. The dress had no boiler. The apparatus of the engine is similar to one of those of the 'Novelty,' a locomotive engine constructed by the same engineer for railway traffic. The pipe by which the water is ejected from two cylinders, by which means the stream can be directed to any quarter. The cylinder is worked axially, and the steam-piston is connected with the water-pump plunger by a rod working through two stuffing boxes. The steam-cylinder is 7 inches in diameter, and the number of revolutions from 120 to 150 minutes. Water-pumps are 6½ inches in diameter. This engine, the total weight of which did not exceed 45 cwt., consumed 3 bushels of coal in 5 hours, by which expenditure it was enabled to throw out from 30 to 40 tons of water per hour, which was equal to the work of 90 men; and it can be worked on one occasion to 90 feet. When an alarm of fire is given, the fire belonging to this engine is kindled, and in 18 minutes the water in the boiler is brought to 212°; and by an ingenious contrivance, bellows are worked by the motion of the wheels, by which heating of the water is hastened. Another engine, on the same construction, by Mr. Braithwaite, possessed 10 horse-power (the former being about 6), and ejected the enormous quantity of 90 tons of water per hour.

In 1832 a steam fire-engine was made for the king of Prussia by the same engine, in which the steam could be got up in 20 minutes to a pressure of 70 lbs. on the square inch. This engine ejected the water through a pipe 1½ inches in diameter to the height of 115 or 120 feet: the nozzle was so constructed, that the power of the engine can be at once changed from propelling the vessel to working the pumps, and thus does double duty. To propel the vessel, the gearing of the coupling-boxes is connected with the paddle wheels; but in order to apply the engine to the propulsion of the vessel, the paddle-wheels are removed, and the engine brought into connexion with the pumps. In many cases a supply of water is obtained for the extinction of fires in large buildings by having a reservoir at the top of the buildings, from which pipes are conducted to various parts; and cocks or valves in those pipes being opened, the water will flow downwards.

The construction of the leathern pipes, or hose, for fire-engines has received much attention. The pipes were occasionally made, in former times, of canvas, covered with leather or canvas, and sewn together; but vessels are now constructed of perfect tubes; but the use of leather seems to be now fully established in this country. An improvement in the materials of these pipes is said to have been lately made in France, by the substitution of flax for leather. The pipes are woven in the same manner as the sticks of patent land-yates, and can be made of any length, without seam or joining. When wetted they swell and become water-tight. It is said that they are more portable than leather, and not so susceptible of injury. The expense also is not more than half that of leather.

The leathern tubes, or pipes, are usually sown up in the manner of boots; but Messrs. Hancock and Tellers, of Philadelphia, a few years ago, devised a mode of fastening the seams by means of metallic rivets, which plan has received further improvements from Mr. Jacob Perkins, of London.

The difficulty of directing the play of the stream of water in an apartment enveloped in flames, without great danger to the fireman, induced Mr. Bramah, about 40 years ago, to invent the valve of the spout, by which the water is thrown out in a jet of water, instead of the general shower, as is done by the old-fashioned fire-engines. This spout is semicircular, and perforated with small holes, and when thrown into the middle of the apartment a minute stream rushes from each hole; and as the directions of the holes are arranged in all angles, within 180° of each other, the jet of water is thrown in every direction, and may be directed by the fireman, as much as he chooses, with a hand on a valve, controlling the water. A large stream can be thrown out in a jet, and even by a gentleman of the law. The jet of water can be directed by the fireman, as much as he chooses, with a hand on a valve, controlling the water.

The firemen belonging to the different insurance companies in London have been formed into a body—the Fire Brigade—the establishment of which has been found to be attended with very beneficial results—results indeed which generally follow the adoption of a system of combined operation. Still more recently the fire-engines of the White Hart Company, under the management of Lieut.-Col. Paulin, of Paris. It is a kind of tubic or hood of leather, covering the head and bust, and is fastened round the middle of the body. Into the head of the covering the man puts a piece of wood, and the covering is then fastened to the back of the dress. A small lamp, or something resembling those used by the metropolitan police, is fastened in front, and a whistle for giving signals is placed opposite to the mouth of the wearer.

The porous situation of human beings in the upper part of buildings, where on fire, has roused the ingenuity of many persons to devise the means of escape; and as the subject is one of great importance, especially in large towns, the following observations may not be without their value.

The means of escaping through the window of a burning house are obviously of two kinds: one from within by the individual himself who is in danger, and the other by the assistance of other persons from without. Of the first kind is a contrivance invented by Mr. Mesrtes, in which an assemblage of strips, or belts, form a kind of seat for the individual, who holds in his hand a rope which passes through a series of holes in a block, and is, at the same time, connected with two hooks or clasps, fastened to the wall a little way below the window. To the end of this strip is tied a rope, and the other end is attached to the ground by allowing the rope, which is attached to the block, to slide through the hands. Contrivances of this kind, whatever may be the ingenuity displayed in their construction, are certain to this drawback—that they require a great attention to minute of fixing, adjusting, &c., at a moment when agitation and fear render the most ill-fitted for the observance of rules of conduct.

Among the multiplicity of fire-escapes which have been
derived, we will briefly mention a few for which premiums or medals have been awarded by the Society of Arts.

In 1809 Mr. Davis received a premium of fifty guineas for inventing an apparatus, which consisted of three ladders applied to each other by four large iron rings on the top and the two lowest, which are so contrived that each ladder may slide into the one beneath it. On the top of the lowest ladder two pulleys are fixed on the inside, over which two ropes pass, and are situated between the lower ladder and the middle one. The ropes are made fast to the bottom of the middle ladder on each side, in a proper direction with the pulleys at the top. The upper ladder is attached to the middle one in the same manner, and on the top it carries two horn-pieces, made of iron, and turned off at a right angle to two large boards or planks, fixed to each other and are sharp at the end to cling to the sides of the window, and thus keep the ladders steady. The compound ladder, which reaches to a height of about 45 feet, is fixed on a frame about 9 feet by 5, and drawn on wheels; and a window is so placed to the frame that it can be wound out from each other, and thus elevated to the position required.

In 1813 Mr. Young received a premium for a fire-ladder, consisting of a number of rounds, which form the steps of the ladder by being fastened to two ropes suspended from an iron frame, terminating in hooks, which can be lodged on the sill of a window, and thus form a convenient ascent, which much resembles that of a common rope ladder. The rounds of the ladder are so made that they are not turned off at a right angle, but are fixed, and elevated from the street in the form of a long straight rod, but without being detached from the ropes which are to form the two sides of the ladder. When the hooks at the top are fixed, a jerk at the bottom will unfix all the rounds from the usual starting position, and allow them to fall into their proper places.

In 1816 a medal was presented to Mr. Braby for a contrivance, which consisted of a pole of any desired length, on the bottom of which is fixed a rope or plank, fixed to a groove or rabbit in the back of a car, which, by means of this groove, slides upon the plank along the pole. A rope, attached to the car, passes over a pulley at the top of the pole, down a channel at the back of it (which is covered with a iron to guard against the rope from injury by fire). The rope is then brought under another pulley at the bottom of the pole. With the assistance of this rope the car may be raised or lowered by persons below, and thus a communication established with an upper window.

Another contrivance was proposed a year or two later, a sort of settee, or chair, for a window recess, which may be hung on the sill of a window like a painter's machine. A bag is suspended from the chair, and is kept open by being made fast to a strong frame, and well secured by girth-web, which passes under a rope or cord which it hangs, with rollers, on of which is called a sufficient quantity to reach from the top of the house to the bottom. When a person gets into the bag from the window the bag begins to descend, and as the web uncoils itself from the rollers it causes the rope to be wound up the roller, by which means the descent is graduated.

The magistrates of Leith have within a few years caused several fire-ladders to be constructed for that town by Mr. Leith, and of the principle somewhat resembling that of Mr. Davis, before described, but more simple in its action.

Recently, two fire escapes, one by Mr. Ford and the other by Mr. Merryweather, have been approved by several of the parties to the other longitudinally into use. That by Mr. Ford consists of a well-seasoned spar 35 or 40 feet long, capped with iron at the top, and having two projecting arms, furnished with prongs, by which a firm bearing against the wall of a house is obtained. The lower end of an iron, terminating in a ground. Just below the cap at the top, a grooved pulley is mortised into the spar, and a corresponding pulley is placed near the bottom. An endless rope runs round these two pulleys, at one point of which is attached a main rope; and another point of the endless rope is fastened to the semicircular bracings of a large grooved roller, which traverse up and down the spar between the two pulleys. This brace carries a hook on the inner side of the spar, to which a car or cradle is fixed, by which persons may be lowered to the ground. The cradle, which consists of a seat and foot-board suspended from a cross head, and has a belt buckled round it, is drawn up by a rope passing over the pulleys.

The other contrivance, and the last which we have space to notice, is by Mr. Merryweather. It consists of ladders of about six feet long, all of iron or brass, which are made exactly alike, the upper end being smaller than the lower; each end is furnished with a pair of iron loops or sheaths, so contrived that the top of each ladder can be inserted into the loops at the bottom of another, and thus several can be joined end to end. The lower part of an iron axle is made to wheel along the front wall in ascending by an ingenious appandage contrived by Mr. Baddely; which consists of two short side-pieces corresponding in form to the bottom part of a ladder. On the upper part is an iron axle resembling a semicircular piece, with a connecting rod of iron preserves the proper position of the side-pieces when not mounted on the ladder. Each end of the axle is provided with rising springs similar to those in an umbrella-stick, which allows the wheels to be slipped on and off the ladder. It has been used in several cases, and is now in readiness. This apparatus is fitted on to the top of the ladder, in the same manner as one ladder is fitted to another.

Seven lengths of this ladder have been fitted to each other, and raised in half a minute by three persons; and by means of a pulley, passing over the top of the ladder, we have seen three persons descend from a height of 30 feet, by a belt fastened round the body, in about two minutes as a balloon.

Whatever kind of fire-escape he preferred, it is necessary that the localities where they are deposited and the mode of using them should be well and generally understood.

FIRE-FLY. [ELATERIDEA; LAMPYRIDA.]  
FIRE-TORCH; LANTERNS. [LAMPYRIDA.]  
FIRE, GREEK, an invention of the middle ages which was often employed in the wars of the Christians and Saracens. This subject has given rise to much inquiry and excited much discussion, the obscurity by which it is enveloped has been increased by being described by many causes, and especially by the love of the marvellous.

According to Gibbon, the deliverance of Constantinople in the sieges of the seventh and eighth centuries may be chiefly ascribed to this novelty, the terrors, and the reality of the Greek fire. It consisted of a small mixture of quicksilver, the oil being produced by the mingled heat of the extended and burning mixture. This was applied to the ramparts of the city, and continued to burn for some days. The mixture of this was employed by the Greeks and Latins on the bridge above the sea, and the reed floating over the water. It was a mixture of saltpetre, charcoal, pitch, and flax, with a little flax and pitch, and was made by boiling flax and pitch with pitch, and was employed by the Greeks and Latins on the bridge above the sea, and the reed floating over the water. It was a mixture of saltpetre, charcoal, pitch, and flax, with a little flax and pitch, and was made by boiling flax and pitch with pitch, and was employed by the Greeks and Latins on the bridge above the sea, and the reed floating over the water. It was a mixture of saltpetre, charcoal, pitch, and flax, with a little flax and pitch, and was made by boiling flax and pitch with pitch, and was employed by the Greeks and Latins on the bridge above the sea, and the reed floating over the water.
long tubes of copper, which planted on the prow of a galley, and fancifully shaped into the mouths of savage monsters, that seemed to vomit a stream of liquid and consuming fire. 

According to Herodotus, the secret of the Greek fire was con-

fined above 400 years to the Romans of the East; it was at length either discovered or stolen by the Mohammedans; and in the holy wars of Syria and Egypt they retorted an invention contrived against themselves on the heads of the Crusaders. 

Carixaria, through the earliest of the French writers, is thus described by Joinville: 'It came flying through the air, like a winged long-tailed dragon, about the thickness of a hogshhead, with a report of thunder and the velocity of lightning; and the darkness of the night was dispelled for a moment. The use of Greek fire was continued to the middle of the 14th century, when the more efficient employment of gunpowder was substituted. When Ypres was besieged by the Bishop of Norwich in 1388, the garrison defended itself with Greek fire, and the sight was so terrific that only in London, and eight and a half gallons were declared to make a firekin.

FIRKIN. [ATTACHMENT.]

FIRMA'N or FIRMÀ'N, is the name of the decree issued by the Turkish Sultan, which signed with his own epistle of the date in 820 of the Hegira, and which points the various pachas and other great officers of the state. Firmaun is also the name of a kind of passport which the pachas in the habit of granting to travellers, especially to those of the European nations, by which they enjoy the subordinate authorities to give the bearer protection and assistance. The 'firmann of death' was a sentence of summary execution issued by the sultan against a pacha, the written order for which was entrusted to a chiaous, or state messen-

FISCUS, FISICUS, was the name given under the Roman empire, and afterwards in the monachies which rose on its ruins, to the private treasury of the sovereign, as distin-

guished from the erarium, or the treasury of the state. The fiscus was chiefly replenished by fines and confiscations, and under the empire by the taxes upon victual and other revenues of the country were paid into the erarium. Under absolute monarchies, however, the two treasuries have been often confounded both in name and in reality. Under the feudal system, fiscus regius and fiscus fiscalus are the same word, and the peasants at-

tached to those domains were called fiscalini. Fiscal by degrees came to be used figuratively for the rights of the crown in civil as well as criminal matters, and the king's attorney was called procurator fiscal, procurator fiscal in French, avvocato fiscale in Italian. Fiscus, in the sense of 'feudum regium,' or fiefs granted by the crown, was con-

trasted with proprietis, or an alienated estate. The word fiscus meant originally a basket or frail in which the monies of the crown were kept. (Fisc.)

FISIL (French, poison; German, Fach), a name applied to all the species of a class of animals occupying the lowest station of the four great divisions of the section vertebrata.

A fish may be defined as a vertebrate animal, breathing through water by gills, or lungs, having one auricle and one ventricle to the heart, cold red blood, and extremities formed for swimming.

Having given the ordinary definition of a fish, it may now be well to proceed with a short account of fishes in general.

In considering fishes, perhaps the most important thing which offers itself to our attention is the apparatus called the branchies, or gills. This apparatus is situated on each side of the neck, and consists of numerous laminae fixed to the branchial arches. It is a passive apparatus, thus being beautifully adapted for swimming. Many fishes moreover have a bladder filled with air situated immediately beneath the spine, by the dilatation or compression of which they may be elevated above the surface of the water. This hollow part of the body is thrown forwards towards the head (so that fishes may be said to have no neck), and thus the hinder part of the body is more free and fitted for motion. The limits are formed into fins, the fore-legs constituting what are termed the pectoral and the hind part (fig. 1.) the caudal fin, or tail.

That all these fins are not always present, nor when present, are they always in the same relative positions; for we shall hereafter find that both the absence of certain fins, and the peculiar position of these organs, afford characters in the classification of fishes. The fins consist of a thin elastic membrane supported by rays. The rays are of two kinds— the posterior ones are called dorsal fins; the anterior ones, pointed, are termed spinous rays; and when the rays are formed of numerous portions of bone united by articulations, and frequently divided longitudinally into several filaments, they are called flexible rays. The principal organ of motion is the tail; the dorsal and ventral fins apparently serve to balance the fish, and the pectorals to arrest its progress when required.

The bones of fishes are of a less dense and compact nature than in the higher order of animals, and always of a different construction, similar to that of the exoskeleton of the mammalia. The skeleton may be divided into four chief parts— the vertebral column, the head, the respiratory apparatus, and the limbs. The vertebral column consists of a chain of vertebrae which lie one after another at each other to the middle; and when joined together the hollow space between each two is occupied by a gelatinous substance, which passes from one space to the next through the hole in each bone. This hole is usually very small, but in some cases it is so large that it is barely noticed. The vertebrae are mere rings. To the vertebrae are attached the ribs; in fact, the ribs are the main support of all the other bones. The head varies more in form than in any other class of vertebrate animals. The same bones as those found in other oviparous animals are almost always traceable. We shall confine our observations to those which most fre-

quently referred to in technical descriptions.

The upper jaw consists of maxillary and intermaxillary bones; in the greater number of fishes the chief portion of the upper jaw, the maxillary bones (fig. 1., 7), being placed behind and

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parallel to them and articulated to the vomer (fig. 3, t). In the salmon tribe, and some other fishes, however, the intermaxillary bones (fig. 2, e) are smaller in proportion, and form a continuous line with the fore-part of the maxillary bones (fig. 2, f).

In the Chondropterygians the maxillary and intermaxillary bones are reduced to mere rudiments, their functions being performed by the bones analogous to the palatines, and sometimes by the vomer.

The lower jaw is generally composed of at least two bones on each side, the dental portion in front, and the articulating portion behind.

The palatines (fig. 3, m n) are extended longitudinally on each side, and form part of the roof of the mouth; they are often furnished with teeth.

The opercular bones. The chief portion of the sides of the head behind the eye consists of the opercular bones; these are generally four in number, and are termed the operculum (fig. 1, g), the sub-operculum (fig. 1, h), the pre-operculum (fig. 1, i), and the inter-operculum (fig. 1, k).

The first of these covers the gills.

The Branchiostegous rays (fig. 1, o), which are often mentioned in descriptions, are situated under the opercular bones.

The teeth in fishes are almost entirely ossaceous; they are usually of a simple spine-like form, and recurved at the tip. Teeth are found in almost every bone in the interior of the mouth; in the superior and inferior maxillary, and intermaxillary bones: likewise on the branchial arches, pharyngeal bones (which are situated in the throat), and on the tongue. There is considerable variety in their structure, as will be found in the various descriptions of fishes found in other parts of this work.

The scales are composed of two substances, one resembling horn in its texture, and the other of a harder and bone-like nature; they are generally attached to the skin by their anterior edge, and consist of numerous concentric laminae (secreted by the skin), the smallest of which is first formed. Certain scales, forming a continuous series, in a slightly waved line from the head to the tail of the fish, are pierced in or near their centre, and furnished with a tube through which a slimy matter is poured, which serves to lubricate the body of the animal. This series of tubes forms a line visible on the sides of the body, and which is termed the lateral line.

The structure, form, and position of the scales of fishes are very variable, and have furnished M. Agassiz* with characters for a new classification of these animals.

As regards the senses, those of taste and touch appear to

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* See the 'Recherches sur les Poissons Piscivores' of Louis Agassiz.
Family Percidae

Section 1. Pectinibranchii

Order 1. Acanthopterygii

Family Theoidae

Pharyngius labrinus

Subfamily thomsoni

Gobius

Lophiidae

Labridae

Centriscidae

Order 2. Malacopterygii

1. Abdominales

2. Subarchiches

Family Cyprinidae

Family Gadidae

Escolites

Pleuronectes

Serranidae

Echeneidae

Order 3. Apodes

Muranoidea

Section 2. Plectognathidae

Gymnomontidae

Soceridae

Syngnathidae

Series 2. Cartilaginii or Chondropterygii

Order 1. Eleutheropomia

Sturgeonidae

Order 2. Plagiostomi

Squalidae

Raididae

Order 3. Cyclostomi

Phracturaea

The characters of the two great series or sections into which fishes are divided has been shown are taken from the nature of the skeleton. It remains for us now to make a few observations upon the minor subdivisions. In the Osteichthyes and Bony fishes, there are three sections. Those of the first, the Pecitibranchii, possess the following characters: Branchiostegous rays; opercular and branchiostegous membranes; jaws complete and free. Section 2, Plectognathi; Branchiostegous rays; opercular and rays concealed beneath the skin; external aperture a simple cleft; jaws incomplete; maxillary firmly attached to the side of the intermaxillary, which alone forms the jaw; palatine arch united to the cranium by suture, and immovable. To this section belong the globe-fishes, file-fishes, &c., and others. The section of the branchiostegous rays rudimentary; jaws complete and free. To this section belong the pipe-fishes, hippocampus, &c.

The two latter sections contain but a limited number of species: the Pecitibranchii, on the contrary, contain the ordinary and typical fishes, and, as seen in the foregoing list, is subdivided into three orders. The fishes of the first of these orders, the Acanthopterygii, are distinguished by having the posterior part of the dorsal, anal, and ventral fins furnished with a long, thin, straight, or pointed rays, mullets, garroids, mackerels, &c., therefore belong to this order. In the second order, the Malacopterygii, all the fins are flexible, with the exception sometimes of the first ray of the dorsal and pectoral fins. The three principal divisions of the Malacopterygii are founded on the position of certain fins, or their absence. In the first division, the Abdominales, the ventral fins are situated far behind the pectorals; as in the carp, tench, bream, dan, &c. In the second, the Subarchiches, the ventral fins are situated immediately behind the pectorals (or even a little before them); as we find them in the cod-fish, baddock, and whiting. The flat fishes also belong to this group—such as the plaice, flounder, turbot, cusk, &c. To the third, the Placodermi, the ventral fins of the Malacopterygii belong the eels, which have received the name Apodes, from their possessing no ventral fins. In illustration of the three orders into which the Carpickia is divided, the Sturgeon will serve as an example of the first, or the Acanthopterygii; the Plagidomia contains the Sharks and Rays; and the Lampreys and Myxine chiefly constitute the Cyclostomi.

FISHER, JOHN, bishop of Rochester, was born at Beverley in 1456. He was educated at the collegiate school of his native place. After some time he went to Michael House College, Cambridge, of which he became master in 1495. The patronage of Margaret countess of Richmond, Henry the Seventh's mother, first brought him into notice. The respect in which she held his character and her high opinion of his learning induced her to appoint him to her chaplain and confessor. He was named the first 'Lady Margaret's Professor of Divinity' in the University of Cambridge, and became bishop of Rochester in 1504. It was some years after this that the actions of this prelate first gained him an historical name. Henry (1527) was anxious to prove both to himself and to others the illegality of his marriage with Catherine of Aragon, he applied to the bishops for their opinions in the matter. One bishop alone refused to sign a declaration that the marriage was invalid. This bishop was Fisher. The persons indeed affixed his signature to the paper, affirming that they had his permission to do so; but the bishop positively denied that he had given them his consent; for in his conscience he believed the marriage to be valid. This refusal, and his high character and the advocacy of his cause, made him many powerful and lasting enemies. Not only did he become hateful to the king, who was desirous for the divorce, but the whole parliament took umbrage at his conduct. Sir Thomas Audley, then speaker, and thirty members of the House of Commons, were sent to arrest him to the king of certain derogatory words which Fisher was declared to have used respecting the assembled representatives; and it was with difficulty that he could persuade them to receive his examination. He felt his doom when both the parliament and the conviction were in debate upon the expiation of denying the pope's supremacy (1534), Fisher again stood alone. He disserted from all the other bishops, and could not, either by persuasion or argument, be induced to concur with their opinion. He went now at band which laid the foundation of his ruin. The imposture of Elizabeth Barton, the nun of Kent, was exposed by the diligence of Cranmer and others; and while the principal agents were condemned to death, it was likewise deemed impossible to acquit those whose deception should not escape unpunished. Among these was Fisher, who, knowing this woman and her associates to be
impersonators, disgraced himself by not exposing the imposition: he made many vain excuses, but was found guilty of misprision of treason. It does not appear that the king proceeded against him upon this charge till he was moved by new provocations. When the death touching the succession and the king's supremacy was offered to him, the bishop of Rochester, as Sir Thomas More had done, refused to wear it. The king, now more than ever irritated against him, caused him to be indicted upon the statute and common law for his titles. But Sir Thomas More (in a very self-satisfied manner, see Burnet, Hist. Ref., vol. i.) and all his goods taken from him; only some old rags were left to cover him; and he was neither supplied well in diet nor other necessaries, of which he made sad complaints. Books were also denied him lest he made his books of the king's supremacy. These inexorable severities met with the most bitter censure of the Roman Catholic party; while many of the Reformers, especially the Lutheran preachers who had frequently been persecuted by Fisher, see Burnet, Hist. Ref., part 1, book 6, are considered as the king's accomplices in absurdity. It was their opinion Pope Clement, in spite to the king, and in kindness to Fisher, sent him a cardinal's hat. When the king heard of this, he desired that the bishop might be examined about it; but Fisher protested that he had used no endeavour to procure it; nevertheless his new dignity precipitated his ruin. His continued denial of the king's supremacy was no longer passed over: on the 17th of June, 1535, he was called to account for this offence. The Lord Chancellor, the duke of Suffolk, and some of the other commissioners, were appointed to examine Fisher's trial; he was found guilty, and condemned to die as a traitor. On the 22nd of June he was beheaded.

The character of Fisher is remarkable for firmness. In their steady maintenance of those questions which, under Catherine, unsettled by the anger of the vindictive king, this quality peculiarly shone forth. Again, with regard to the supremacy, the obstinacy and tyranny of Henry VIII. were before him; it was clear that no circumstances or redoubled invitations of cunning or quibbling could induce him to do any change, unless the same persecution awaited him. He might have followed the example of numbers who, though zealous for papacy, but now deserted its cause: the spirit of the time was not too liberal to favour this species of hypocrisy. Rightly, or wrongly, Fishery was immovable, not being convinced that he was in the wrong; his fearless firmness allowed him to maintain an open profession that he was in the right. He was a learned and decent man, and his conduct fully proved his sincerity.

FISHERIES are localities frequented at certain seasons by shoals or great numbers of fish, sometimes of one particular description only, where they are taken upon a large scale. The right of frequenting these fishing-grounds has frequently been the subject of discussion among governments, and sometimes the subject of treaties, while exclusion from them or invasion of presumed exclusive rights to their enjoyment has been the cause of warlike preparations. The principal kinds of fish which are the object of these systems, are cods, pollacks, codlings, lobsters, haddock, mackerel, oysters, pikefish, salmon, whales, anchovies, sardines, sturgeon, and tunny. With the exception of the four last-named descriptions, the fishermen of this country are engaged in the taking of all these fish, and pursue it, or calling to an extent which makes each an important branch of national industry. The quantity of other fish taken by British fishermen is in the aggregate exceedingly great, and furnishes constant employment throughout the year to a vast number of persons living on almost the whole of Great Britain and Ireland; but it has not been usual to apply the word fisheries otherwise than as we have already mentioned.

Of the British fisheries, some are carried on in rivers or the adjacent seas, in the British dominions, the Channel Sea, and the British dominions, the Channel Sea, the Clyde, and the Tyne. Our principal cod-fishery is on the banks of Newfoundland; and for whales our ships frequent the shores of Greenland, Davis's Straits, and the South Seas. Of late, whale fisheries have also been carried on near the shores of New Holland and of the Cape of Good Hope.

The Appendix to the Report of the Commissioners of Inquiry into the State of the Irish Fisheries, which was presented to parliament in 1836, contains an historical Sketch of the progress of the British and Irish fisheries, drawn up by Mr. T. C. Morgan, M.D., one of the commissiorers; and from this sketch the following particulars are principally taken:—

The taking of herrings was extensively pursued in Scotland in the ninth century, and continued until the Convenant of Royal Burges in 1542 prohibited the exportation of fish, before the residuum population was supplied at a stipulated price. In consequence of this interference, many of the fisherfolk abandoned the pursuit at home, and settled in Holland—a circumstance which first drew the attention of Henry VIII. to the fisheries. But even in his time, provisions for their encouragement were passed under James III., IV., and V. of Scotland for the promotion of the fisheries; and James VI., before his accession to the English throne, directed the building of three towns for the same purpose; but this was a failure. It was afterwards revived by Edin-burgh.' An Association of the three kingdoms for a general fisheries within the bailiwick and coasts of his majesty's said kingdoms. A standing committee was named for the government of the Association, which was joined by many persons from different persons and customs, and excise duties upon all naval necessaries; besides which, voluntary collections were made from wealthy and patriotic individuals for building wharfs, and various other objects connected with the fisheries. These measures of protection appear to have been successful; for six years later we find that the fisheries were undertaken by Simon Smith, who, in addition to all the advantages conceded to Sir Thomas Andews, was also permitted to export herring fishery, and to bring them in, in return for fish shipped to foreign countries. Charles II., on his restoration, appointed, in 1667, a 'Council of Royal Fishery,' to which the duke of York, the earl of Clarendon, and other persons of honour and wisdom were named, with the power of ordering and regulating the business, and to punish any persons who should offend against their provisions. For further encouragement, a lottery was granted for three years; a collection was made in churches; and an exemption granted for seven years from customs, both on imports and exports, on the sole of fish exported to the Baltic, Denmark, Norway, France, and some other countries. Besides this, all victuallers and coffeehouse-keepers were compelled each to take a certain number of barrels of herrings yearly at 30s. per barrel, until a foreign market should be found for the fishery, and the exportation of the same was prohibited. Beyond these encouragements, a duty of 2s. 6d. per barrel was imposed upon foreign herrings imported; and a promise was made of all such other advantages as experience should discover to be necessary. Great as were these advantages, they only increased the number of the herring fisheries, which were increased by the extension of the laws for the navigation to the American dominions, and to punish any persons who should offend against their provisions.

In 1749 a committee of the House of Commons was appointed to inquire concerning the herring and white fisheries, and as the result of its labours a corporation was formed, with a capital of 500,000l., under the name of the London and South Sea Company for Exploiting the Herring Fishery. A bounty of 36s. per ton on all decked vessels engaged in fishing was granted for fourteen years. This bounty was increased in 1652 to 55s. per ton, but without producing an adequate return to the adventurers, and in 1759, by the 3d Geo. III., a bounty of 50s. on all vessels engaged, was granted; besides 2s. 6d. per barrel upon all fish shipped, and interest at the rate of 3 per cent. was secured to the subscribers, payable out of the Company's revenue. The whole number of vessels entered on the Custom House books for the fisheries in consequence of this act was only eight.
<table>
<thead>
<tr>
<th>Year ending</th>
<th>Cured.</th>
<th>Branded.</th>
<th>Exported.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1815</td>
<td>340,894</td>
<td>270,022</td>
<td>227,162</td>
</tr>
<tr>
<td>1820</td>
<td>382,491</td>
<td>309,700</td>
<td>235,316</td>
</tr>
<tr>
<td>1821</td>
<td>442,195</td>
<td>363,872</td>
<td>294,805</td>
</tr>
<tr>
<td>1822</td>
<td>361,524</td>
<td>363,305</td>
<td>214,936</td>
</tr>
<tr>
<td>1823</td>
<td>248,869</td>
<td>203,310</td>
<td>173,645</td>
</tr>
<tr>
<td>1824</td>
<td>392,190</td>
<td>299,631</td>
<td>239,630</td>
</tr>
<tr>
<td>1825</td>
<td>374,665</td>
<td>270,844</td>
<td>202,016</td>
</tr>
<tr>
<td>1826</td>
<td>379,233</td>
<td>294,822</td>
<td>217,673</td>
</tr>
<tr>
<td>1827</td>
<td>258,455</td>
<td>225,606</td>
<td>166,406</td>
</tr>
<tr>
<td>1828</td>
<td>306,727</td>
<td>279,917</td>
<td>214,349</td>
</tr>
<tr>
<td>1829</td>
<td>355,979</td>
<td>234,827</td>
<td>205,875</td>
</tr>
<tr>
<td>1830</td>
<td>329,556</td>
<td>215,418</td>
<td>181,654</td>
</tr>
<tr>
<td>1831</td>
<td>439,270</td>
<td>237,085</td>
<td>264,903</td>
</tr>
<tr>
<td>1832</td>
<td>362,660</td>
<td>157,839</td>
<td>317,499</td>
</tr>
<tr>
<td>1833</td>
<td>416,564</td>
<td>168,294</td>
<td>296,668</td>
</tr>
<tr>
<td>1834</td>
<td>394,916</td>
<td>178,000</td>
<td>272,933</td>
</tr>
<tr>
<td>1835</td>
<td>277,317</td>
<td>85,079</td>
<td>158,805</td>
</tr>
<tr>
<td>1836</td>
<td>497,615</td>
<td>192,317</td>
<td>273,393</td>
</tr>
<tr>
<td>1837</td>
<td>397,727</td>
<td>141,192</td>
<td>185,265</td>
</tr>
</tbody>
</table>

The number of boats and of fishermen, and other persons employed in taking, gutting, curing, and packing cod and herrings in each of the six years from April, 1837, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Boats</th>
<th>Number of Fishermen</th>
<th>Number of Curers, &amp;c.</th>
<th>Total Number employed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1838</td>
<td>11,659</td>
<td>49,164</td>
<td>31,492</td>
<td>91,310</td>
</tr>
<tr>
<td>1839</td>
<td>11,382</td>
<td>48,181</td>
<td>28,274</td>
<td>88,837</td>
</tr>
<tr>
<td>1840</td>
<td>11,284</td>
<td>49,212</td>
<td>33,054</td>
<td>83,526</td>
</tr>
<tr>
<td>1841</td>
<td>11,329</td>
<td>29,462</td>
<td>32,961</td>
<td>83,232</td>
</tr>
<tr>
<td>1842</td>
<td>11,427</td>
<td>49,270</td>
<td>37,178</td>
<td>88,898</td>
</tr>
<tr>
<td>1843</td>
<td>11,494</td>
<td>51,397</td>
<td>34,626</td>
<td>83,333</td>
</tr>
</tbody>
</table>

The impolicy of the bounty system has been praised in a very striking light in the evidence of Mr. Townshend, of Liverpool, a factor for the sale of fish. The fishermen of that part of the coast are mostly inhabitants of a village on the coast called Skerries, where the houses are nearer and in better repair now than were the during the time of bounties, and the men themselves better employed in more industrious, and more temperate than they were during the bounty. Nothing was more calculated to demoralize them than the bounties, as they were given; nothing could have been more mischievous or more injurious to the tonnage-bounty system; it was, in fact, a bounty on idleness and perjury. Their increased prosperity has arisen from their astoundingly increased industry, and their greater reliance on their own exertions, without looking to extraneous aid. In Scotland the fishery has been able to hold its own against foreign competition by still reduced prices; and the capital which has been invested in the fishery has returned a profit. The profits of the business since the removal of the bounty, to replace the small boats they formerly used by new boats of larger dimensions, and to provide themselves with fishing materials of superior value.

A select committee of the House of Commons was appointed in 1833 to inquire into the state of the British Channel fisheries. A second committee was appointed in 1835 to consider the state of the salmon fisheries in Scotland, and in the previous year commissioners had been instructed to investigate the condition of the Irish fisheries. From each of these bodies reports have proceeded which have been laid before parliament and contain a considerable amount of information upon the subject.

Taking these branches of the inquiry in the order here given, we proceed to describe the present, as it is ascertainable, the actual condition of the fisheries connected with the coasts and rivers of the United Kingdom. The appointment of the committee in 1833 arose out of the distress which was at that time said to affect the several Channel fisheries, and in its report the committee stated that these fisheries were generally in a very depressed and declining state; that they appear to have been gradually sinking since the peace in 1815; that the capital employed does not yield a profitable return; that the number of vessels has been diminished, and the fishermen who formerly could maintain themselves and their families by their industry were in a greater or less degree pauperized.

The cause of this unfavourable change, to which, as in the opinion the most readily susceptible of remedy, the committee gave its principal attention, was the interference of the fishermen of France and Holland; but the principal cause of the distress was stated to be the great end-
creasing scarcity of all fish which breed in the Channel, compared with what was the ordinary supply 15 to 20 years ago, operating prejudicially to the fishermen, at the same time that a continued fall of prices has taken place in the markets. This fall of prices could not have occurred in consequence of any scarcity in the supply. That there was a diminished quantity taken by the English fishermen may possibly have been true; but considering that the supply in our markets was actually increased so as to provide our growing population at progressively decreasing prices, we can only account for the fact adduced by the committee by supposing that the foreign fishermen, of whose interference such a grievous complaint was made, were better skilled and more persevering in their calling than our own countrymen a supposition which seems to be borne out by the circumstances; for since this remark was made, still more abundantly supplied with fish for our tables; while the cry of distress on the part of the fishermen has passed away, doubtless owing to the greater degree of skill and industry which they have since exerted.

A complaint, its engagement in it is sight forward by the committee, has of late been preferred against our fishermen by the owners of the boats, who allege that, having advanced all the capital necessary for the undertaking, and having probably also contributed to the support of the men during the winter, without an agreement to receive at stipulated prices all the produce of their nets, the men so bound to them sell a considerable part of the fish which they take to boats despatched from the coast of France, or in these instances have been mentioned, because a great and it is thought a groundless impression has been created by the result of the inquiry of 1833, which inquiry, it has been alleged, was undertaken to satisfy the desires of certain interested parties who wished to make out a case for an alteration of the government.

One branch of fishing wholly different in its object from all other branches has been described by the committee of 1833 under the title of the *Stow-Boat Fishery*. This fishery prevails principally upon the Kentish, Norfolk, and Essex coasts. It is the catching of sprats, not for food, but as a means for the land, for which there is a constant demand. This branch of fishing is represented by the committee to have much increased, and to give employment on the Kentish coast alone to from 400 to 500 boats, which remain upon the fishing grounds throughout the year, and until each has obtained a full cargo of dead fish.

The facility with which the pretence of employing vessels in fishing gives to the operations of smugglers has led to an act of parliament, 6 Geo. IV. c. 108, under which vessels and persons engaged in such practice are liable to be arrested by the commissioners of the customs. The licences thus granted specify the limits beyond which fishing-vessels must not be employed: this distance is usually four leagues from the English coast, and it is affirmed that our fishermen are restricted in this, whereas some valuable fishing grounds lie beyond the prescribed limits and are thus abandoned to foreigners.

The *pitchard fishery*, which is carried on upon parts of the Devon and Cornwall coasts, is of some importance. The number of boats engaged in it is about 1000, which give employment to about 3500 men at sea and about 5000 men and women on shore. The pitchlars visit our shores in August and September, and again in November and December; they congregate in large shoals into shallow water. As soon as caught they are salted and preserved, and sent to foreign markets, chiefly to the Mediterranean: the average export amounts to 30,000 hogsheads per year. The quantity was much greater formerly, when a bounty of 8s. per hogshead was paid upon all exported. This bounty has now ceased, and as additional reasons for the diminution of the fishery, it is said that Lent is not now strictly observed as formerly in the countries to which the exports are made, and that the heavy duty, equal to 18s. per hogshead imposed upon importation into Naples, has long been the predominant cause of the trade.

The extent of the British *herring-fishery* has already been noticed. The places where it is principally carried on are Yarmouth, Lowestoff, Hastings, Folkestone, Cardigan Bay, and the north and west coasts of Scotland; the coasts of Caithness, Sutherland, Berwickshire, Banffshire, Morayshire, and Ross-shire, in Scotland; and Galway, Killybegs on the coast of Donegal, Mayo, the estuary of the Shannon, the coast between Dingie Bay and Kennmare, Bantry Bay, Waterford, and from Mizen-head to Cahore point on the Wicklow coast, in Ireland.

The principal herring-fishery off the coast of Norfolk and Suffolk commences in September and ends in the beginning of December. Mackeral fishing begins in May and ends in July. No material changes have occurred in the seasons, but herrings are more numerous of late years on the Yorkshire coast. For both fisheries decked-vessels of 30 to 60 tons register are generally used.

The salmon-fisheries are carried on in the rivers and estuaries of Scotland. As no bounty has been at any time payable upon the taking or exporting of this kind of fish, it has been difficult to ascertain its actual or comparative amount. Some partial returns have been obtained from persons who have rented the different fishery grounds, but these do not offer a complete view of the fishery, and its produce being consumed within the kingdom, the customhouse, which takes no note of goods conveyed from port to port, affords no help towards supplying the deficiency. A daily account has been given of the salmon-fisheries in the rivers on the coast of Sutherland, from which the following table, giving the produce for three years to 1835, has been taken:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Fishermen</th>
<th>Number of Fish</th>
<th>Bills of Fisherman</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>12,314</td>
<td>32,136</td>
<td>23,457</td>
</tr>
<tr>
<td>1834</td>
<td>15,035</td>
<td>35,049</td>
<td>25,142</td>
</tr>
<tr>
<td>1835</td>
<td>16,855</td>
<td>37,963</td>
<td>26,916</td>
</tr>
</tbody>
</table>

The produce of the salmon-fisheries in some other of the rivers of Scotland, during each of the same three years, was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>River</th>
<th>Number of Fishermen</th>
<th>Number of Fish</th>
<th>Bills of Fisherman</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>River</td>
<td>10,449</td>
<td>14,687</td>
<td>13,420</td>
</tr>
<tr>
<td>1834</td>
<td>River</td>
<td>7,646</td>
<td>27,354</td>
<td>25,945</td>
</tr>
<tr>
<td>1835</td>
<td>River</td>
<td>11,549</td>
<td>30,056</td>
<td>26,515</td>
</tr>
</tbody>
</table>

The average weight of the fish may be estimated at 10 lbs.

The produce of the fishings in the rivers Tay, Dee, Don, Spey, Findhorn, Beauty, Borrowed, Langwith and Thruso, and of the coasts adjacent, are conveyed in steam-boats and small sailing vessels to Aberdeen, where they are packed with ice in boxes and sent to the London market. The shipments thus made from Aberdeen in each of the three years ending with 1835, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>River</th>
<th>Number of Fish</th>
<th>Bills of Fisherman</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>River</td>
<td>10,449</td>
<td>14,687</td>
</tr>
<tr>
<td>1834</td>
<td>River</td>
<td>7,646</td>
<td>27,354</td>
</tr>
<tr>
<td>1835</td>
<td>River</td>
<td>11,549</td>
<td>30,056</td>
</tr>
</tbody>
</table>

Each box contains on the average from 10 to 15 fish and weighs 120 lbs. A statement, which does not however appear to be entitled to much confidence, has been given of the quantity of salmon brought by sea to London from Scotland and Ireland in each of the years 1834 and 1835, viz.:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Fish</th>
<th>Bills of Fisherman</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>18,254 cwt.</td>
<td>26,515</td>
</tr>
<tr>
<td>1835</td>
<td>20,557</td>
<td>26,515</td>
</tr>
</tbody>
</table>

The most productive salmon-fisheries in Ireland are
The main tributaries of the Boyne are the Mattock and Blackwater.

The Bann with its tributaries, the Dromore, the Belmore, and the Derry.

The Shannon with its tributaries, the Fergus, the Maig, and the Annacotty.

The Liffey with its tributaries, the Nore, the Barrow, and the Nore.

The River of Benburb with its tributaries, the Bann, the Upper Bann, and the Milltown.

The Killyglass with its tributaries, the Lagan, the Derent, the Mourne, the Dergh, the Mournbeg, the Killinburn, the Strule, and the Camannon.

The Lennon or Rathmellon which joins Lough Swilly.

The Lackagh with its tributaries, the Owencarrow and the Clune.

The Ballyness and the Raye.

The Esk or Downegul river, with its tributary the Drimmie.

The Enniskerry River.

The Newry and its tributaries, the Skudagh, Buckadoo, Glenisland, and Beltra.

The Moy and Balcony.

The Boyle and its tributaries, the Belsa and Lung.

The Glenarm and它的 tributaries, the Glenisland, the Gleniscan, the Glenisland, and the Dunguny.

The Lona and Banied.

The Blackwater and its tributaries, the Owbeg, the Funcheon, and the Annaglin.

The Suir, the Barrow, and the Nore.

The Strangford and its tributaries, the Enniskerry, Powerscourt, and Glenisland, and the Lifey.

Mackerel are fish of passage which visit every part of our coasts in the spring and early part of the summer, and are taken in great abundance. In this country they are used fresh, and great quantities are conveyed by rapid land journeys to the coast of London. For the several kinds of the mackerel and other similar fishes, the carriages in which the fish are thus conveyed are exempted from the post-office duty. The general desire to obtain this fish in perfection has led to the well-known relaxation of our laws against Sunday trading, which permits the open hawking about of mackerel on that day, a practice which is punishable with regard to any other fish, or indeed to articles of any kind, with the exception of milk. The fish-boats on the west coast are sufficiently near the Thames are accompanied by fast-sailing cutters, which collect the takings of the fishing-boats and proceed with the cargo to Billingsgate market while the boats pursue their occupation. During a favourable season 100,000 mackerel are landed every week at the fish market of each of the fisheries, which, as described, are brought by land conveyance to London and sold at a kind of auction on the beach by the fishermen to the owners of the earts or vans, whose success in the speculation depends mainly upon their quickness in bringing them to the market for consumption.

The principal fisheries on the eastern coast of England are in the neighbourhood of Whitby, Hartlepool, and Robin Hood’s Bay. The fish-markets of Liverpool and Manchester, and, since the opening of the Grand Junction Railway, of Birkenhead, are generally well supplied by land carriage with fresh fish, both round and flat, from these fishing grounds. A good deal of fish likewise comes to that port by steam-vessels from the Isle of Man.

The demand for fresh fish in the west of England is said to be extensive and increasing. In the season of 1833, according to the Report of the Commissioners, probably 80,000,000 of pilchards were sold for home consumption, besides a large supply of mackerel, hake, &c., fresh and salted. The fish is distributed throughout the country in every quarter of the year, and at the rate of 1 to 1.5 lb. per person, and herrings at 2s. per lb.; cod-fish at 5s. per lb.; red mullets 2d. to 6d. each; turbot 2d. to 6d. per lb.; mackerel 5d. to 1s. each.

The different fishing grounds of Scotland and Ireland, and the kinds of fish found most abundantly at each, are as follows:

Scotland.
Leith—Herrings, cod, ling, haddock.
Dumbarton—Cod, haddock, haddocks, and gad instruction. Scotland.

The French by their extraordinary frugality, joined with their other great advantages, such as the cheapness of salt, and having the best and most convenient part of the country for fishing, have quite beaten the English.

Burntisland—Herrings, cod, ling, haddock.
Stonehaven—Herrings, haddocks, salmon, ling, skate, mackerel.
Peterhead—Herrings, cod, haddocks.
Port Gordon—Herrings.
Findhorn—Herrings, cod, haddocks.
Cromarty—Herrings, lobsters.
Caithness—Herrings.
Wick—Herrings, cod, ling, hake, salmon, haddock, flounders.
Burgh—Herrings.
Tongue—Herrings.
Ullapool—Herrings.
Loch Carron—Herrings, cod, ling, hake.
Inverary—Herrings, cod, ling, salmon.
Greenock—Herrings, cod, ling.
Rothesay—Herrings.
Campbell—Herrings, turbot, sole, flounders.
Orkney—Herrings, cod.
Shetland Isles—Herrings, cod, ling.
Stornoway—Herrings, cod, ling.

Ireland.

Coast of Dublin—Cod, haddock, whiting, herrings, and salmon.
Louth—Cod, haddock, conger, ling, mackerel, whiting, herrings, and salmon, hake, and cod.
Donegal—Cod, haddock, ling, whiting, conger, turbot, sole, plaice, stair, mackerel, herrings (200 boats), mullet.
Antrim—Cod, ling, conger, pollock, flatfish, turbot, haddock.
Donegal—Soleuse, plaice, oysters, herrings, turbot, cod, ling, eels, haddock, dores, hake, whiting, conger, mackerel, sprat, gurnet.
Sligo—Turbot, cod, and all kinds of fish that frequent the Irish coast.
Mayo—Turbot, sole, cod, ling, haddock, hake, whiting, glassen, conger, gurnet, pollock, mackerel, herrings, skate, sprat, bream.
Galway—Cod, ling, pollock, mackerel, bream, herrings, conger, sun-fish, haddock, gurnet, whiting, hake, turbot, gilthead, sole, plaice, dores, hake, and gassen.
Clare—Turbot, cod, ling, haddock, hake, sole, whiting, gurnet, mackerel, thornback, dores, ray, skad.
Kerry—Turbot, haddock, gurnet, pollock, plaice, sole, doré, cod, whiting, ray, conger, mulet, mackerel, shad, bream, herring, pilchards, hake, ling, gassen.
Cork—Turbot, sole, cod, ling, haddock, mackerel, conger, hake, whiting, shad, pilchards, herrings, plaice, pollock, haddock, doré, skate.
Waterford—Cod, ling, hake, haddock, glassen, herrings.
Dover—Cod, ling, hake, gurnet, whiting, turbot, mackerel, herrings, pilchards, lobsters, conger, bream, sole, plaice.
Wicklow—Herrings, cod, oysters, ling, haddock, whiting, mackerel, soleuse, plaice, pollock, trout, salmon.

Cod.—The cod fishery at Newfoundland was carried on as early as 1580 by the Portuguese, Biscayans, and French, but it was not until 1566 that the English ventured to interfere with them. In that year Sir Francis Drake being sent to the island with a squadron, seized the foreign ships which he found engaged in the fishery, and sent them to England, where they were declared lawful prizes. Seven years before that time attempts had been made to settle a colony upon Newfoundland under a charter granted by Queen Elizabeth, but without success. In 1610 a company was incorporated for the same purpose by King James I., and so successfully was the fishery prosecuted, that in 1614 there were near 200 vessels engaged in it: in the following year the number exceeded 250. The author of "Considerations on the Trade to Newfoundland," inserted in the second volume of Churchill's "Collection of Voyages," tells us that "towards the end of the seventeenth century the French were in the habit of employing in these fisheries about 500 sail of ships, a great many of which were of good burthen, and mounted from sixteen to forty guns, to man which they had by a moderate computation about 14,000 men. This writer adds, 'that the French by their extraordinary frugality, joined with their other great advantages, such as the cheapness of salt, and having the best and most convenient part of the country for fishing, have quite beaten the English.
out of this trade, as may be instanced in many of the outports of our nation, and particularly Barnstaple and Biddeford, which formerly employed in this trade above fifty ships, and now do not list above six or eight small ships.

By the treaty of Utrecht, which acknowledged the sovereignty of the whole island of Newfoundland to be in the crown of England, the privilege of fishing on part of the coast was reserved to France, notwithstanding which the English fishery there increased to a great extent. In 1763 there were taken and cured by the English at the fisheries of Newfoundland 386,274 quintals or 8,730,000 cwt. of codfish, and 654 tons of salmon, besides 1,598 tons of fish oil. In that year there were 106 vessels employed in carrying on the fishery, 123 ships for conveying the fish when cured to England, and 142 ships for its conveyance to British colonies. The principal fisheries of Newfoundland are prosecuted on the banks which nearly surround that island: the object of these fisheries is solely cod-fish. [NEWFOUNDLAND.] Salmon, mackerel, herrings, and some other kinds of fish, are taken off the coasts of the island; and the seal fishery is successfully carried on, yielding a considerable number of seal-skins and a large quantity of seal-oil for exportation.

The cod-fish cured and exported to England and to France amounted to 491,776 quintals; and the subsequent success of the fishery will be seen from the following account of its produce exported in each of the three years from 1832 to 1834:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Ships from</th>
<th>Produce of Fish.</th>
<th>Total Tonnage</th>
<th>Tons of Fish Oil.</th>
<th>Tons of Whalebone.</th>
<th>Tons of Whale Oil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>69</td>
<td>7,766,177</td>
<td>882,156</td>
<td>279,817</td>
<td>46,399</td>
<td>19,086</td>
</tr>
<tr>
<td>1833</td>
<td>85</td>
<td>7,794,451</td>
<td>895,486</td>
<td>289,379</td>
<td>47,845</td>
<td>20,599</td>
</tr>
<tr>
<td>1834</td>
<td>95</td>
<td>7,952,578</td>
<td>909,686</td>
<td>297,618</td>
<td>50,120</td>
<td>22,005</td>
</tr>
</tbody>
</table>

The total produce of the fisheries in these three years, exclusive of the oil, was valued as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of Fish.</th>
<th>Value of Oil.</th>
<th>Total Value.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>$432,609</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1833</td>
<td>$456,425</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1834</td>
<td>$469,174</td>
<td></td>
<td>$1,358,208</td>
</tr>
</tbody>
</table>

These fisheries may be said to be the sole pursuit of the settlers in Newfoundland, and of the traders who frequented the island. Nearly every family has a small piece of land under garden cultivation, but agriculture is not pursued as a substantive occupation.

In the other British North American colonies, with the exception of Upper Canada, fisheries are not pursued, and the produce enters more or less into the foreign commerce. The kinds of fish exported are chiefly cod, herrings, salmon, and mackerel. The actual value of these exports from each colony, in the three years 1832 to 1834, was as follows:

<table>
<thead>
<tr>
<th>Colony</th>
<th>Value of Fish.</th>
<th>Value of Oil.</th>
<th>Total Value.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Canada</td>
<td>$40,476</td>
<td></td>
<td>$40,476</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>$33,882</td>
<td>$5,509</td>
<td>$39,391</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>$186,199</td>
<td>$12,180</td>
<td>$198,379</td>
</tr>
<tr>
<td>Prince Edward's Island</td>
<td>$63</td>
<td>$11</td>
<td>$74</td>
</tr>
<tr>
<td>Cape Breton</td>
<td>$30,983</td>
<td>$11,963</td>
<td>$42,946</td>
</tr>
<tr>
<td>Total</td>
<td>$300,907</td>
<td>$53,638</td>
<td>$354,545</td>
</tr>
</tbody>
</table>

These fisheries were, of course, carried on successfully during the twelfth, thirteenth, and fourteenth centuries by the Biscayans. The whales, which are frequently met with in the Bay of Biscay, appear to have been of a smaller species than those since found in more northern latitudes. The Biscayan fishery has long ceased, owing probably to the great destruction of the animals. It is to the voyagers who, near the end of the twelfth century, attempted to make a passage through the northern ocean to India, that we owe the discovery which led to the establishment of the fishery in the seas of Greenland and Spitzbergen. The English and the Dutch were the first to embark in this adventure, but the French, Dutch, and Danes, and others, soon followed, and it was not slow to become as profitable to them as it had been to their example. At first the whales were so numerous that the fishing was comparatively easy, and was so successfully pursued, that in addition to the ships actually engaged in the trade, many other vessels were sent in ballast to the shores of Spitzbergen to return home laden with full cargoes of oil and whalebone. It was then the practice to boil the blubber on the spot, and bring home the oil in casks. In the progress of the fishery the whales became less numerous, and, when found, more difficult to take. It therefore became necessary to pursue them farther to the open sea, and at length it was found more economical to bring the blubber home in order to its being boiled, and the settlements before used for that purpose were abandoned.

That part of the Arctic Sea which lies between Spitzbergen and Greenland, and which was formerly frequented by the whale ships, is now almost wholly abandoned because of the scarcity of the fish, and the northern whale fishery is now chiefly pursued in Davis's Straits. The change here noticed has occurred within the last twenty years, as appears from the following statement of ships which arrived from the northern fishery in each year from 1815 to 1834, distinguishing between those from Greenland and those from Davis's Straits. In this table will also be found the aggregate tonnage of the ships and the number of tons of oil and tons of whalebone imported.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Ships from</th>
<th>Produce of Fish.</th>
<th>Total Tonnage</th>
<th>Tons of Fish Oil.</th>
<th>Tons of Whalebone.</th>
<th>Tons of Whale Oil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1815</td>
<td>89</td>
<td>147,148</td>
<td>737,683</td>
<td>548</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>1816</td>
<td>101</td>
<td>146,686</td>
<td>739,380</td>
<td>638</td>
<td>26</td>
<td>2</td>
</tr>
<tr>
<td>1817</td>
<td>143</td>
<td>146,424</td>
<td>764,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1818</td>
<td>143</td>
<td>146,926</td>
<td>745,380</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1819</td>
<td>143</td>
<td>146,424</td>
<td>764,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1820</td>
<td>102</td>
<td>146,846</td>
<td>755,187</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1821</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1822</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1823</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1824</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1825</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1826</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1827</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1828</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1829</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1830</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1831</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>1832</td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
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<td>630</td>
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</tbody>
</table>

It appears from the foregoing table that the average results of the Greenland and Davis's Straits fishery, computed from twenty years' experience, are as follows:

<table>
<thead>
<tr>
<th>Average</th>
<th>Number of Ships</th>
<th>Tonnage of Fish</th>
<th>Tons of Fish Oil</th>
<th>Tons of Whalebone</th>
<th>Tons of Whale Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>143</td>
<td>146,798</td>
<td>748,897</td>
<td>630</td>
<td>25</td>
</tr>
</tbody>
</table>

The average prices during the twenty years embraced in this table were—of whale, 28s. 15s. per tun, and of whalebone, 163l. per ton; it follows therefore that the annual average produce of the fishery has amounted to 421,704.

The proportions in which the different parts of the kingdom participate in this fishery is shown by the following statement, applying to the year 1834:

<table>
<thead>
<tr>
<th>Part</th>
<th>Number of Ships</th>
<th>Tonnage of Fish</th>
<th>Tons of Fish Oil</th>
<th>Tons of Whalebone</th>
<th>Tons of Whale Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>76</td>
<td>$1,035,728</td>
<td>8,014</td>
<td>441</td>
<td></td>
</tr>
</tbody>
</table>

Previous to the revolt of the North American provinces this fishery, as well as that in the Southern Ocean, was prosecuted with great spirit by the colonists of Massachusetts. Just before the beginning of the war they established annually 183 ships of 13,820 tons in the Northern, and 121 ships of 14,026 tons in the Southern whale fisheries. This display of enterprise on the part of the colonists was thus
FitzStephen, William, author of the earliest description of London extant, was of Norman extraction, but born in the metropolis. He became a monk of Canterbury, and was much interested with Archbishop Becket; he was one of his clerks, and is said to have undertaken the writing of the annals of the cathedral, and to have collected information for the histories of William of Malmesbury and of Eadward the Confessor, which are based on his work. He was also an eye-witness of the archbishop's murder at Canterbury, and continued with him after his other clerks and scriptoria had fled. Fitzstephen is supposed to have died in 1191. His 'Description of the City of London' was part of another work, 'The Life and Passion of Archbishop Becket.'

Dr. Pegge fixes the time of the composition of this work between the years 1170 and 1182: and adds that we may challenge any nation in Europe to produce an account of its capital city or any other description so remote a period as the 12th century. It was accordingly noticed by Leland and Stow, the latter of whom inserted a translation of it in his 'Survey of London.' Dr. Pegge, in 1772, published Fitzstephen's original text, with a more accurate translation and notes. It is the best edition.

Fitzstephen, if we may judge from his quotations, was well versed in the Latin, and had looked into some of the Greek classics. (Fitzstephen's Descrip. Lond. newly translated, &c., by an Antiquary (Dr. Sam. Pegge), 4to., Lond., 1772; Chalmers's Biogr. Dict. vol. xiv. p. 472.) There is a fine uncollated M.S. of Fitzstephen's history among the Lansdowne volumes in the British Museum, and a fragment of another copy among the manuscripts of the late Francis Douce, Esq., in the British Museum.

FIUME, formerly St. Veit am Flumau (in the Illyrian language Raka or Rakca), the chief town of the circle of the same name in the Austrian government of Trieste and kingdom of Illyria, is situated in a narrow valley at the efflux of the Raka river from the Strait of Leba, and separates the islands of Plagge and the Chemical from the coast of Durazzo, generally known as Durrës.

From the manner in which the Custom-House accounts are given, it is not possible to state from them the produce of this branch of the whole fishery. The following account of the importation of Southern oil during 13 years, from 1795 to 1807, has been obtained from the 'House of Commons by a gentleman who, of all our merchants, is the most largely engaged in the business.'
of his epigrams, inviting him to abandon poetry for the bar, as a sure means of making his fortune. He seems to have died young at Padua; and Quintilian speaks of his death as a loss to literature. He wrote his Argonautica in imitation of Apollonius. The poem is full of digressions and episodes, amidst which the name of the heroes is only dimly discernible. Some of the descriptions however are remarkably fine and poetical; and it is observed that Flaccus is more elegant in those parts of the poem which are of his own invention than in those which he has borrowed or imitated from Apollonius. His style is at times obscure, and he is very fond of displaying his erudition, which is often out of place. We have only eight books or cantos of his Argonautica, the last of which is incomplete; the whole poem is supposed to have consisted of ten or twenty cantos. The poem was issued by Flaccus himself in the year of St. Gall. G. B. Pio published in 1519 an edition of it, adding the termination of the eighth canto as well as the ninth and tenth cantos of his own composition.

FLAG, the ensign or colours of a ship; from the Anglo-Saxon flægge, to fly or float in the wind. Flags borne on the masts of vessels designate the country to which they respectively belong; and they are likewise made to denote the quality of the officer by whom the ship is commanded.

The supreme flag of Great Britain is the Royal Standard, which is hoisted when the king or one of the royal family is on board the vessel: the second is that of the anchor on a red flag, which characterizes the lord high admiral, or lords commissioners of the Admiralty: and the third is the union flag, in which the ensigns of St. George, St. Andrew, and St. Patrick are blended. This flag is appropriated to the admiral of the fleet, who is the first naval officer under the lord high admiral. The Custom-house and the East India Company have distinguishing bearings in their respective flags.

In the British navy a fleet is divided into three squadrons—the centre, the van, and the rear; the centre being distinguished by red colours, the van by white, and the rear by blue, and respectively commanded by an admiral, a vice-admiral, and a rear-admiral. There are in each fleet, as large, there are three divisions in each squadron; and each squadron has then its admiral, vice-admiral, and rear-admiral, who respectively hold the command of its centre, van, and rear divisions. The admirals are divided in like manner, there being an admiral, a vice-admiral, and a rear-admiral of the red squadron, and so of the white and blue squadrons; but in all cases an admiral carries his flag at the main, the vice-admiral at the fore, and the rear admiral at the mizen.

The British flags are plain red, white bearing the red cross of St. George, and plain blue; and the ensign worn by the ship that carries a flag, as well as by every ship belonging to the same squadron, is always of the same colour as that of the flag-officer commanding it.

FLAGELLATION. The idea of self-punishment dates from a remote antiquity. Herodotus relates (ii. 42) that the Egyptians flogged themselves at one of their annual celebrations. Flagellation was administered as a trial of fortitude to the young Lacedaemonians, who, it seems, in accordance with the peculiar institutions of Lycurgus, did not attach to this castigation the idea of degradation which modern Europeans do. In Rome, however, the punishment of flagellation was only applied to slaves, and it seems to have been pretty common in the houses of the patricians. Flagellation was a form of punishment inflicted by the kind of discipline, neither is it mentioned in the original regulations of the Benedictine order, the first that was established in the West. The

The legends which describe the lives of the saints who lived before the beginning of the fifth century never speak of flagellation amongst the various torments which the above-mentioned saints inflicted on themselves, although they record frequent instances of the devil's venting his wrath on them from the bush or the rock. The first known instances of this kind of flagellation occur about A.D. 400, and from that time they became continually more frequent till the year 1506, when Cardinal Peter Damian de Humestis promoted by all his influence the practice of self-flagellation, which the leprosy, the plague, and the 'Ecclesiastical Annals,' Cardinal Baronius, calls 'a laudable usage of the faithful.' Damian's efforts were attended with great success, and the chroniclers relate that persons of religious dispositions were seen everywhere with their faces disfigured by flagellations, and with their bodies covered with their own skins in order to draw down on themselves the blessings of Heaven. This practice began to spread so widely that many of the less bigoted clergymen endeavoured to discountenance it, but unsuccessfully, and it became every day more prevalent among the benedictine monks of that dark age. About the year 1260 the intoxication was complete. People being no longer satisfied with practise similar punishments in private, began to perform them in public on pretence of greater humiliation. Regular associations were formed which practised these flagellations, and the extravagancies which they committed were of such a nature that even the contemporary writers, although accustomed to such scenes, seem to have been struck with astonishment. Such at least was the case with the monk of St. Justinia, Andromachus, a later writer who gives a circumstantial account of these fanatics.

When all Italy was sullied with crimes of every kind, says the above-mentioned annalist, 'a certain sudden superstition hitherto unknown to the world first seized the inhabitants of Pisa, and afterwards spread over other parts of Italy, and made itself felt even in the capital and in the dwellings of the simple. The flagellants, it seems, were not so many persons, young and old, even children five years of age, as would go naked about the streets with only their private parts covered by a thin mantle, and people who were not less than five hundred even in public, two and two, in the manner of a solemn procession. Every one of them held in his hand a scourge made of leather thongs, and with tears and groans they lashed themselves on their backs till the blood ran; all the time weeping and giving thanks to God as if they had really been spectators of the passion of our Saviour, imploring the forgiveness of God and of his holy mother, and praying that he who had been appeased by the repentance of so many sinners would not disdain theirs. And not only in Pisa but in other towns and cities, in a thousand, even in a hundred and thousand thousands of the same people, were seen daily, in the streets, in piazzas, in villages, in cities, in the towns and in the villages, flogging themselves with thongs, with thongs, with thongs, with thongs, with thongs, with thongs, with thongs, with thongs. The same scenes were exhibited in small towns and villages; so that the mountains and the fields seemed to resound with the voices of men crying to God.' The same annalist relates that music, songs, and every kind of solemnity accompanied, and that women and men were punished in these devotions. This general superstition produced however some good effects.

Then, continues the same writer, 'those who were at enmity with one another became friends. Usurers and thieves, who formerly employed their money in the most low and base purposes, were now employed in doing good to their right owners. Others who were contaminated with different crimes confessed them with humility, and renounced their vices. Gaols were opened, prisoners were set free, and banished persons permitted to return to their native habitations, who had been convicted of flagellation.'

This sudden repentance was the effect of the terror inspired by the general belief that the end of the world was at hand. Such mental fever could not last very long, and indeed it seems to have soon subsided. But in the 14th century flagellants were heard of again. In England this practice was so prevalent that the plague in the 14th century, the flagellation mania broke out with new fury. Not only all the scenes of the 13th century were re-enacted, but the excesses of fanaticism became even worse than before. The flagellants spread over all Europe, and a large number of them reached London in the reign of Edward III. Their
number consisted of 120 men and women. Each day at an appointed hour they assembled, ranged themselves in two lines and paraded the streets scouring their naked shoulders and chanting a hymn. At a given signal, all with one voice began the operation. Mr. Sym (Annals of Phil., vol. vii. p. 321) "the internal part of the flame is comparatively cool, the actual combustion being diffused over the surface, and concentrated at the apex." Mr. Sym deduces many curious and important experiments in proof of his opinion; but the most decisive facts in its favour are those related by Mr. Mansoni. Mr. Davies (Ann. Phil., vol. x. p. 447), and they appear fully to warrant the inference he has deduced from them, that the interior of flame will not support combustion, and that on account of its containing no oxygen.

A piece of phosphorus was placed upon a small wooden stand in a Wedgwood dish; spirit of wine was then poured into the dish in such a manner that it did not reach the phosphorus. The spirit of wine was lighted, and its flame completely enveloped the combustible body. In the course of a few seconds the phosphorus became fluid, and remained in that state upon the stand, and never in a single instance inflamed, until the alcohol was consumed or its flame extinguished, though in several instances the spirit of wine continued to burn for three or four minutes. The phosphorus always burst into a vigorous flame when the spirit of wine was extinguished. When the flame of the spirit of wine was blown upon, so that the edge of it came in contact with the phosphorus, the phosphorus immediately burst into a flame, but the flame was instantly extinguished. The phosphorus was restored to its original state.

Mr. Davies states also that a lighted wax taper, surrounded by alcohol, was extinguished when the alcohol was inflamed.

That flame is merely a thin film of white hot vapour, and that this combination produced a material flame, as is shown in a former passage of this volume, must now be admitted.

The flame is produced by various cooling processes: thus when a piece of glass is put over it, or into the flame of a candle, it becomes covered with a sublimate of lime.

The brilliant flame is produced by various chemical processes, such as the formation of phosphorus from the spirit of wine and charcoal; the fusion of the charcoal with the lime; the distillation of the ether and other volatile substances.
ceremonies. The Flamingoes were distinguished by peculiar pileus, or hat, of a conical shape, which was fastened under the chin. Their number, which was originally only three, was increased afterwards as new gods were introduced, and it is said that at last even the emperor used to be attended by these Waders (Grallatæ and the Anatidae). The form approaches in some points to Recurvirostra (Avoet) and Platalea (the Spoonbills), and in others comes nearest to the Ateria (Geese). C. L. Bonaparte also places him, with Latécoere and Platalea, between his family Pinipetidos (Phalaropes, &c.) on the one side and the Ateria on the other. Mr. Vigors, in his paper 'On the natural affinities that connect the orders and families of birds,' thus marks his position among the Grallatæ: 'In which the families Ardea and Ciconia appear those forms which display so remarkably a dilatation of the bill, the Cereonera (Boat-Bill) Phamcopeterus, and Platalæ of Linnaeus. The two last of these groups are equally distinguished by a greater development of the membrane that connects the toes that is observable in the other Waders which join them on each side; and in one of them, the Phamcopeterus, this character is carried so far to the extreme as to have occasioned some systematists to place them in a separate genus altogether (Grallatores). But the whole of the family have a membrane, more or less extensive, at the base of the toes; and if we compare the feet of the common Ciconia alba (Stork), of the Platalæ, and the Phamcopeterus together, we shall see a gradual increase of this membrane from the one to the other that reaches the extreme in the latter genus.' Mr. Swainson appears to be one of those who place the Flamingo among the swimmers. In his 'Natural History and Classification of Birds' (1836), he says, 'the Flamingo, which has the longest legs in the Natural Order, is so good a swimmer that it only swims occasionally.' The close correspondence of many parts of the organization of the bird with the same parts in the Anatidae will be remarked by the reader when he comes to the anatomial description hereinafter stated.

The bill is very long, strong, and dilatated, conical towards the point, naked at the base; upper mandible suddenly bent, arched at its point on the lower mandible, which is larger than the upper. nostrils longitudinal in the middle of the bill, pierced through and through by a double row of the red beak, closed at its extremity by a membrane. Feet very long; three toes in front, bind toe very short, articulat'd high up on the tarsus; anterior toes united to the nails by a liminated membrane (membrane découpée). Natl. short, flat. Wings moderate; first and second secondary absent.

Temminck, whose generic character we have given, says that the Flamingoes live on the sea-beach or in marshes formed by salt lakes, where their food consists of testaceous mollusks, marine insects (crustaceans?), and the spawn of fishes, which they collect by plunging their long neck into the water and turning the head upside down, so as to employ with greater advantage the bend of their bill. They join in large troops and live in societies. Their nest is made in the marshes, and consists of earth piled up, and upon which are placed the eggs. Silts or sand is never used in the nest, nor thimbles. The reposing or fishing, sentinels are appointed which keep a sort of guard. If anything alarms the vétéde he utters a trumpeting kind of cry, and the whole flock follow him into the air. They rarely take their repose in any other than open places; and it is asserted that their sense of smelling is so acute that they scent from afar the hunter and fire-arms. Their moult appears to be simple, and takes place entirely at the young age. The male is black, the female white, in both of which the young resemble their parents. The red or rosy plumage which covers the bill shows itself gradually, after many moult's and a period of about four years. The females are less than the males, and the colours of the former want the purity which distinguishes the latter; the young, at their departure from the nest, are white. The body of the Flamingo has hardly a greater covering of down than that of the other Waders, the Avoets alone excepted; and accordingly they do not swim habitually, like the latter birds, when they wish to go from one lagoon to another in deep water. The palmed foot of the Flamingoes appear to be given them to enable them to sustain themselves on the slippery bottoms of rivers and creeks into which they wade as far as their long legs will allow, and which they have learned to walk on; they make an angle like the Geese. In walking they often apply their upper mandible to the ground, and lean on it as a point of support.

M. Temminck positively asserts that the Flamingo of Europe is not the same species as those of the Antillæ. The differences are different. He states that he knows the plumage of the American Flamingo from its youth to its adult state, and declares that they are all different from the various species of the Flamingo of the antient continent. The orange-red bill with purple patches in the family &c. makes the American species when it has arrived at its complete state of development is sufficient to distinguish that bird from our European Flamingo, which is of a rose-colour, with wings of purple-red. The young of the latter (Phamcopeterus Antiquorum) has the plumage whitish, covered with brown (mêches), very distinctly marked and long, principally on the greater wing-coverts; the American Flamingo (Phamcopeterus ruber) is covered in its youth with a dull white-gray plumage. Three species then are recorded by M. Temminck.

1. The Flaming of the Antients, Phamcopeterus Antiquorum, Flannat Phamcopeterus, of Buffon, the Flammant and Flamingo of old authors. Locality, south of Europe, Africa, and part of Asia.


3. Phamcopeterus minor, Flannat Pygme, previously described by Vieillot as Phamcopeterus parvus. Locality, South America.

M. Lesson observes that at all events it would be more convenient to retain the original name of Linnaeus, Phamcopeterus ruber, for the Flamingo of the Old Continent, and to suffer that given by Molina to the American bird, viz., Phamcopeterus Chilensis, to remain, although Wilson, who does not appear to have recognized any specific difference, records the last-mentioned Flamingo under the name of Phamcopeterus ruber. The latter is used by most of the English zoologists to designate the Flamingo of the Old World. As the object was to prevent confusion, adopt the nomenclature suggested by M. Lesson, wishing, at the same time, that Molina's name had not been a name of locality.

Before we enter into the history of these several species it will be useful to notice the characteristical or external structure of the Flamingo, and Mr. Owen has enabled us to do this in his Notes on the Anatomy of the Flamingo, Phamcopeterus ruber of Linnaeus, which died in the menagerie of the Zoological Society of London in the summer of 1822. After observing that the anatomical differences observable in the groups of the Wading Birds are so considerable, that we find them generally alluded to by Cuvier in the characters of the Grallatæ, in the 'Rêgne Animal,' he remarks that, where they are omitted, we may presume that the illustrious author had not had the opportunity of examining the internal structure of the birds in question, and that they either had not before been dissected, or that their anatomy had been described with too little exactness to warrant his giving it on the authority of previous writers. Mr. Owen was enabled to make an accurate dissection of these three genera which Cuvier has placed at the end of the order, viz., Chionia, Forster; Gmelina, Gmel.; and Phamcopeterus, Linn.; and these, observe Mr. Owen, are the most interesting in an anatomical point of view, being the representatives of so many distinct families. With respect to the Flamingo, Mr. Owen supposes that an opportunity of dissecting it had never occurred to Cuvier, and that probably the absence of any allusion to cecæ in Perrault's ana-

...
mandible, form together a sort of filter, and, like the plates of whalebone in the Baleen, allow the superfluous moisture to drain away, while the small mollusca and other littoral animalcula are detained and swallowed. The structure of the gullet is in accordance with the size of the animal and the wants of nutrition. In the typical Grallatores, as Ardea and Ciconia, which swallow entire fish and other food in large morsels, the esophagus is remarkable for its great and uniform capacity; but in Phanicopterus it is the more than half an inch in diameter when dilated. At the lower part of the neck it expands into a considerable pouch, which measured, in the specimen here described, 3 inches in diameter, and 4 inches in length. In Perrault's specimen the diameter was only 1½ inch, and it is probably the result of contraction, as he describes it as furnished internally with many small longitudinal rugae. The circular fibres around this part were very distinct. Beyond this pouch the esophagus again contracts to about 4 lines in diameter, and so continues for 33 inches, when it terminates in the proventriculus. This glandular cavity was 1 inch 8 lines in length, and 5 lines in diameter: the gastric follicles were broad, short, and simple, and were arranged in two long oval groups, blending together at the edges. The proventriculus terminates in a small but strong gizzard, of a flattened sphenoid form, measuring 1 inch 5 lines in length, and the same in breadth; the lateral muscles were each half an inch in thickness. The gizzard was lined with a moderately thick and yellow-coloured cuticle, disposed in longitudinal ridges, the extremities of which projecting into the pulp, and forming 18 very minute papilliform elevations, in the gizzard of the Ostrich. In a Flamingo dissected by Colonel Sykes, in which the duodenum was blocked up by two large tape-worms, the muscles of the gizzard were 1 inch in thickness. The duodenal fold extended towards the left side 4 inches from the pylorus. This intestine was 4 inches in diameter. The pancreas, which occupied its common situation between the two portions of the fold, had a more complete peritoneal covering than usual. The intestinal canal soon diminished in diameter to 3 and then to 2 lines. The small intestines formed an oval mass, and were disposed in twenty-one elliptical spiral convolutions, eleven descending towards the rectum, and ten returning towards the gizzard in the interspaces of the preceding; a disposition analogous to that of the colon in Animales. The villi of the intestines were arranged in longitudinal zigzag lines. There were two caeca, each about 31 inches in length, and 5 lines in diameter. The testis were about the size of grains of wheat, and were situated on the anterior part of the renal capsules. The latter bodies were about the size of hazel-nuts. Both the glands were of a bright yellow colour. The fat of this bird is of a remarkable orange tint. The principal digestive appearances were in the lungs, which were filled with tubercles and romanica. I was much struck with finding the inner surface of the liver cavity, and that of most of the smaller ramifications of the branchial tubes, covered over with a green vegetable mould or mucor. As the individual was examined within twenty-four hours after its death, it seemed reasonable to conclude this mucor had grown there during the lifetime of the animal. This would appear that internal parasites are not exclusively derived from the animal kingdom, but that there are Entophyta as well as Entozoa.

The tongue of the Flamingo is remarkable for its texture, magnificence, and peculiar armature. It is almost cylindrical, but dilated above, and narrowed laterally, so as to corresponding with the form of the inferior mandible. The lower part of the truncated surface is produced in a pointed form, and is supported beneath by a small horn-like plate. The whole length of the tongue is 3 inches, its circumference 21 inches. Along the middle of the flattened superior surface there is a moderately deep and wide longitudinal furrow, on either side of which there are from twenty to twenty-five recurved spines, both of a soft and yielding horn-like texture, measuring from one to three lines in length. These spines are arranged alternately in series, the outer ones being the smallest, and the, i.e., indeed, may be considered a distinct row. At the posterior part of the tongue there are two groups of smaller recurvem spine directed towards the glosso. The substance of the tongue is muscular, but is excessively covered with an abundant, yielding, cellular substance, with fat of an almost oily consistence. It is supported by a long and thin conical cartilage articulated to the body of the os hyoides by a shallow ginglymoid joint allowing of a free motion. Exceeding the straight hyglognor, the muscles all terminate at the base of the tongue. The tendons of the former muscles run along the under part of the lingual carilage, and expand to be inserted at its extremity, where a few fibres again proceed forwards to the extreme point of the tongue. In the museum of the Royal College of Surgeons in London (Gallery) is a preparation, No. 524 E, of the crop, proventriculus, and gizzard of a Flamingo, Phanicopterus ruber of Linneaus; and No. 1476 of the same museum is a preparation of the tongue of that bird.

Species of the Old Continent.

Phanicopterus ruber (Linne.): Phanicopterus antiquorum (Temm.).

Description.—Length from the end of the bill to that of the tail 4 feet 2 or 3 inches, but to the end of the claws sometimes more than six feet. Bill 4½ inches long; upper mandible very thin and flat, and somewhat movable; the under mandible thick, both of them bending downwards from the middle; nostrils linear and placed in a blackish membrane; end of the bill as far as the bend black, from thence to the base reddish-yellow, round the base, quite to the eye, covered with a flesh-coloured core; neck slender and of great length; tongue large, fleshy, filling the cavity of the bill, furnished with twelve or more hooked papillae on each side, turning backwards; the tip a sharp cartilaginous substance. The bird when in full plumage wholly of a most deep scarlet, except the quills, which are black. From the base of the thigh to the claw thirty-two inches, of which the feathered part takes up no more than three; bare part above the knee thirteen inches, and from thence to the claws sixteen; colour of the bars white, and toes furnished with a web deeply indented. Legs not straight but slightly bent, the skin rather projecting. (Latham.)

Nest formed of earth, and in the shape of a hallow, with a cavity at top; eggs two or three, white, of the size of those of a goose, but more elongated.

Utility to man.—Flesh very good meat: the young thought by some equal to partridge. The inhabitants of Provence, however, are said to throw away the flesh as fishy and only to use the feathers as a ornament to other birds at particular entertainments. Not the Roman epicures. Apicius has left receipts for dressing the whole bird with more than the minute accuracy of a modern cookery-book, and the Phanicopterus ingens appears among the luxuries of the table in Juvenal's eleventh satire. The brains and the tongue figure as one of the favourite dishes of Heliogabalus, and the superior excellence of the latter was dwelt upon by the same Apicius and noticed by Pliny where he records the doctrine of that neuropus omnium alismatis gurges. (Lib. x. c. 48.) Neither has it escaped the pointed pen of Martial—

* Dat mihi penna robens nomen; sed lingua colores
The ‘garum lingua’ most probably alludes to the tongues and brains of singing birds, which sometimes formed one of the mostious dishes at the enormously expensive Roman entertainments. Damascus does not forget the delicious tongue of the Flamingo, observing that a dish of these tongues is worthy of a place at a prince’s table. The bird itself seems to have been held in high repute by the ancients, for it appears to have been one of the victims offered to Caligula, who is said to have been sprinkled, while sacrificing, with the blood of a Phoenicopterus the day before he was murdered.

pause in their progression, and they appear for a moment immovable in the air; then tracing by a slow and even movement a reversed conical spiral figure they attain the end of their migration. Brilliant in all the splendour of their plumage and ranged in line, these birds offer a new spectacle, and represent a small army ranged in order of battle, the uniformity and symmetry of which leave nothing to be desired: but the spectator should content himself with observing this peaceful colony from afar. We go to him if he dare approach the lake at this deadly season.

Phoenicopterus parvus, Vieill. Phoenicopterus minor, Pluvainnius pagamus, Temm. M. Tennimack observes that no difference is perceptible between the Flamingos of the Antient Continent and that of the New World in the size of the mandibles: their upper mandible shifts on the latter one, and is so constructed as to offer, when the bill is shut, a very slight difference in the height of the two mandibles. In Phoenicopterus parvus the lower mandible, very long and strongly arched, is formed to receive, within the space which separates its walls, the whole of the upper mandible, which it entirely hides, so that the upper edges of the lower mandible raise themselves to the height of the nares of the upper jaw.

The plumage of the adult is pure rose-colour without spot or streak; the head, the neck, the back, and all the lower parts are of this beautiful tint, which is more lively and pure in the living bird than in the preserved skin: for the livid brilliance of this tint becomes tarnished and presents a whiteness from exposure to the light. The great wing coverts and those of the tail are slightly deeper in colour than the other parts of the plumage. The whole wing a coat of feathers of a brilliant scarlet or purple, sprinkled by a wide rufous border; the tail-feathers are black. But of the bill, cere, and region of the eye deep purple; middle of the lower mandible orange-red, and the point black. Joint of the knee, toes, and their membranes of a fine red; the tarsus has a livid tinct. Total length nearly three feet.

Young of the year.—White or whitish, marked with small brown streaks (incoles) spread over the head, the neck, the breast, and the coverts of the wings. The first red tints show themselves on the wings. Bill black; tint of a reddish livid tinct.

Locality.—Lakes of Africa. Those received by Mr. M. Tennimack were natives of the Cape of Good Hope. The young bird in the museum at Paris was brought from Senegal.
order into the ranks of the close and cumbersome phalanx. Panic pervaded the Macedonians; many threw down their, arms and fled, and Philip himself, seeing the rout becoming general, left the field, and rode off towards Tempe. The Macedonians left behind more than three thousand dead, and a vast number of prisoners. Soon afterwards the king asked for a truce, which was granted by Flamininus, in order that messengers might be sent to Rome to treat of peace. The senate appointed ten legates, who, in concert with Flamininus, drew up the conditions, which the latter thought likely to secure the Macedonian town and fortress beyond the limits of his paternal kingdom, that he should give up all his ships of war, reduce his military establishment, and pay 1000 talents for the expenses of the war. Flamininus was then continued in his command for another year, 196 B.C., and the whole of the peace was finally executed. In that year, at the meeting of the Isthmain games, where multitudes had assembled from every part of Greece, Flamininus caused a crier to proclaim that the senate and people of Rome and their commander Titus Quinctius, having subdued the Philip and the Macedonians, restored the Corinthians, Phocaeans, Locrians, Eubeans, Thessallians, Phthiotae, Magneta, Pherabae, and Achaeans to their freedom and independence, and to the enjoyment of their own laws. Burst of acclamation followed this proclamation, and the crowd pressed forward to express their gratitude to Flamininus, whose conduct throughout those memorable transactions was marked with a wisdom, moderation, and liberality seldom found united in a victorious Roman general. He checked by his firmness the insubordination of his allies, who threatened to resist the destruction of Philip, while he satisfied all just claims of the rest; and although his Macedonian expedition led ultimately to the entire subjugation of both Macedonia and Greece, yet he was at the time the means of restoring peace and friendship to both countries. The Macedonian and the Greek states for half a century longer. In the following year, 195 B.C., Flamininus was entrusted with the war against Nabis, tyrant of Lacedaemon, who had treacherously seized the city of Argos. Flamininus advanced into Laco尼亚, and laid siege to the city; he met the enemy, who were under the command of Nabis, and at last agreed to grant peace to Nabis on condition that he should give up Argos and all the other places which he had usurped, and restore the descendants of the Messenians to their lands. His motives for granting peace to Nabis were, he said, partly to prevent the destruction of one of the most illustrious of the Greek cities, and partly because of the great preparations which Antiochus, king of Syria, was then making on the coast of Asia. Livy suggests, as another probable reason, that Flamininus wished to terminate the war himself, and give him some share in the glory which he had so much deserved to have. Accordingly, he set sail for Greece, and having assembled the various allies of Rome, he embarked on the coast of Epirus, and landed with a force of about 20,000 foot and 1000 horse at Promontorium. After remaining there for some time, he marched up to the city of Nabis, and having reduced it, he sent a square hundred to pay the debts of the city, and free the prisoners there held. Having received the answer of the senate, he returned to Greece, and in the following year, 194 B.C., Flamininus having settled the affairs of Greece prepared to return to Italy. Having restored the city of Corinth, which had been destroyed by the Macedonians, he with his allies, had now to consider the measures which it was necessary to take. He had to concert with his allies, and to inform them of the measures which he had taken or was about to take, and to settle the affairs of the city. He therefore met the allies at Delphi, and there arranged the terms of peace with the Macedonians. The terms were agreed to, and Flamininus returned to Italy, and from there to Greece, where he was received with great acclamations. He then returned to Rome, and was awarded the295

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SPECIES OF THE NEW CONTINENT.

Phaneropterus Chilenus (Molina), Phaneropterus ruber, Red Flamingo. These species in its adult state scarcely differs from the European Flamingo. It is much smaller and not so bright. Catesby says, 'When they feed (which is always in shallow water, by bending their necks) they lay the upper part of their bill next the ground, their feet being in continual motion up and down in the mud, by which motion the mud is raised, and the Flamingo is taken in with it. There is a necessity for their receiving into their mouths some mud. Nature has provided the edges of their bills with a skin or teeth like a fine comb, with which they retain the mud and reject the plants. Flamingoes always kick the mud about in the water, or throw it upon the ground.'

Locality.—Warmer parts of North America, Peru, Chili, Cuyane, coast of Brazil, and the West India Islands, particular colonies on the island of Coreya, with a reinforcement of 8000 foot and 800 horse, marched up the country, where he found Philip posted in a rugged pass on the banks of the Aous, among the mountains of Western Epirus. After some fruitless negotiations with the king of Macedonia, the Romans, under the guidance of an Epirote shepherd, attained by a mountain path the rear of the Macedonian position, and Philip was obliged to make a hurried retreat across the chain of Pindus into Thessaly. He was followed by the Romans, and, having cut off his rear, marched on and ravaged the country. Meanwhile L. Quintius Flamininus, the brother of the consul, sailed with a fleet to the eastern coast of Greece, where, being joined by the ships of the Rhodians and of Attalus of Pergamus, he succeeded to Corinth, which was allied or subject to the king of Macedonia. The consul himself marched into Phocis, where he took Elatea, and having there fixed his winter-quarters, he succeeded in detaching the Achaeans from the Macedonian alliance. In the following year Flamininus was confirmed in his command as proconsul, before beginning hostilities abreast held a conference with Philip on the coast of the Malian gulf, and allowed him to send legates to Rome to negotiate a peace. The senate however having required that the whole of all the allies should be occupied, including Demetrius in Thessaly, Chalcis in Eubea, and Corinth, the negotiations were broken off and Flamininus resumed military operations. He marched from Phocis into Thessaly, where Philip was stationed near Larissa with a body of 16,000 phalans men, 2000 peltasts, and 5000 Thracian and other auxiliaries. After some previous demonstrations and partial attacks, the two armies met between Pherr and Lariasa, in a country broken by small hills called Cynosecheus, or Dog's Heads. The Macedonians met him with a left wing, and the right wing where the king commanded in person, and where he had formed his phalanx on a hill, but Flamininus observing the left wing moving in column with a narrow front to their assigned post, attacked it with his elephants and the rest of his army, and forced them to retreat. In the pursuit of this body a tribune of the victorious legion led being led beyond the flank of the right wing, ventured to attack it on the rear, and he succeeded in spreading disarray among them, and then in forming a line, and pursuing them down the coast of Epirus, whilst he repaired to Thessaly to settle the internal affairs of that country, and the Greek states for half a century longer. In the following year, 195 B.C., Flamininus was entrusted with the war against Nabis, tyrant of Lacedaemon, who had treacherously seized the city of Argos. Flamininus advanced into Laco尼亚, and laid siege to the city; he met the enemy, who were under the command of Nabis, and at last agreed to grant peace to Nabis on condition that he should give up Argos and all the other places which he had usurped, and restore the descendants of the Messenians to their lands. His motives for granting peace to Nabis were, he said, partly to prevent the destruction of one of the most illustrious of the Greek cities, and partly because of the great preparations which Antiochus, king of Syria, was then making on the coast of Asia. Livy suggests, as another probable reason, that Flamininus wished to terminate the war himself, and give him some share in the glory which he had so much deserved to have. Accordingly, he set sail for Greece, and in the following year, 194 B.C., Flamininus having settled the affairs of Greece prepared to return to Italy. Having restored the city of Corinth, which had been destroyed by the Macedonians, he with his allies, had now to consider the measures which it was necessary to take. He had to concert with his allies, and to inform them of the measures which he had taken or was about to take, and to settle the affairs of the city. He therefore met the allies at Delphi, and there arranged the terms of peace with the Macedonians. The terms were agreed to, and Flamininus returned to Italy, and from there to Greece, where he was received with great acclamations. He then returned to Rome, and was awarded the
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owed the Roman prisoners who had been sold as slaves to the Greeks by Hannibal during the second Punic war, and which Plutarch has related to us from the gratitude of the Greek states. The Achaeans alone are said to have liberated 1200, for whom they paid 100 talents as compensation money to their masters. Altogether there never was perhaps a Roman triumph so satisfactory as this to all parties. The birth of Newton was a year 1642 a.m. Flamsteed was sent to Prussia, king of Bithynia, upon the ungracious mission of demanding the person of Hannibal, then, in his old age, a refugee at the court of Prussia. Hannibal, however, by taking poison, avoided being given up. In the year 1662 Flamsteed was made augur in the room of C. Claudius deceased (Livy, xlv. 44), after which he is no longer mentioned in history.

FLAMSTEED, JOHN. The life of the first astronomer royal was known to the world chiefly by the results of his great work, and for a century and a half, it has been a subject of curious interest to private affairs have been brought to light in an unexpected manner, and have excited great interest, not without creating some party feeling among those who cultivate the sciences connected with astronomy. In 1692 Mr. Francis Baily, it is said that a considerable collection of Flamsteed's letters was in the hands of a private individual; which, on being examined, was found to contain much that was not generally known. On searching the Observatory at Greenwich, Mr. Baily found a vast mass of MS. observations and other documents, in the handwriting of Flamsteed and his friends, containing the curious history of which we shall give a brief abstract. The result of this discovery was a representation to the Board of Visitors of the Royal Observatory, who recommended the republication of the Catalogue of CATALOGUE OF STARS, and of other papers of Flamsteed. The Lords of the Admiralty having decided to print this at the public expense, Mr. Baily undertook the preparation of the work, which appeared in 1825, under the title of 'An Account of the Rev. John Flamsteed,' which is added his Brief Catalogue of Stars, corrected and enlarged.' From this work, which is certainly the most remarkable scientific biography of the present century, we have entirely drawn the materials of this article. The original account is in part drawn by Mr. Baily from a manuscript by Flamsteed, headed 'Brief Inspections, by J. F.,' which is a very interesting autobiography.

Flamsteed was born at Denby, near Derby, August 1646. His father was in some business, it has been said that of a miller; he lost his mother when very young. At the age of fourteen he caught cold while bathing, which produced a weakness in the joints, from which he never recovered. He began his mathematical and astronomical studies at an early age, and showed talent in constructing astronomical instruments. In 1665 he visited Ireland for the purpose of consulting a Mr. greatraks, who professed to cure disorders by the touch, and of whose experiments in London a curious account exists. [BOYLE, RANSONE] Being by this treatment, he returned to Derby, where his father lived, and where he had received his education. Here he continued his studies till 1669, and with great success. In or before 1667 he discovered the real causes of the equation of time, and wrote a treatise on the subject, which was afterwards appended by Dr. Wallis to his edition of the works of HOOX, published in 1672. In 1669 he made an astronomical communication to the Royal Society through Oldenburg, their secretary, concealing his name under theagram Flamsteed. He then became a polemical, which, being transposed, gives

Johannes Flamsteedius: this same anagram appears in the title-page of the tables appended to the doctrine of the sphere in Sir Jonas Moore's system of astronomy. Flamsteed had a share in this. An answer from Oldenburg, addressed to himself, showed him that he was discovered, and from that time, or rather from the date of a visit which he very shortly afterwards paid to London, he was in correspondence with many scientific men, but particularly with Sir Jonas Moore, who, in 1674, proposed to establish Flamsteed in a private observatory, which he intended to build at Chelsea. In the mean time however the fact of the very large errors to which astronomical tables were subject came to the notice of Charles II., on the occasion of a proposal made by a French gentleman for finding the longitude (GREEN-

WICH OBSERVATORY), and that king determined to establish an observatory. Flamsteed was appointed astronomer royal, and the building of a large observatory was commenced and carried on his observations at the queen's house, in Greenwich Park, until the observatory was ready, which was in July, 1676. From this time Mr. Bally dates the commencement of modern astronomy; nor can such chronology be disputed. The following is a list of the earliest and latest Flamsteed's observations as the earliest with which it is desirable to compare those of our day, and also that Flamsteed's catalogue is the first which attained a precision comparable to that of later times. Flamsteed was in fact Tycho Brahe with a telescope: there was the same expediency of adapting instrumental means, the same sense of the inadequacy of existing tables, the same long-continued perseverance in actual observation. But Tycho Brahe, a rich noble, found his exchequer in a king's purse; while Flamsteed, who was not provided with instruments himself, upon an ill-paid salary of one hundred pounds a year. Up to the year 1684 he had imposed on him the task of instructing two boys from Christ's Hospital, as one of the duties of his post; and, besides this, he was obliged to have recourse to private teaching, to meet the charges of carrying on his observations. At the very same time, that part of the public which cared about the matter were beginning to require that he should print his observations.

Almost at the outset of his labours he was so well known that Dr. Bernard invited him to become a candidate for the Savilian professorship of geometry at Oxford, which he declined to do. He had at this time nothing but a sextant and clocks of Sir Jonas Moore's, and some instruments on the basis of the instruments from the Royal Society, and after repeatedly urging the government to provide him with an instrument fixed in the meridian, he caused a mural arc to be constructed at his own expense, which was erected in the year 1683, but proved a failure. In 1678 he published in the Philosophical Transactions the following, 'I have in the present year obtained the degree of Master of Art from Cambridge. It is not certainly known that he was a student in that university, though it is certain that he was for some months at Cambridge in 1674. Perhaps he obtained his degree before the completion of his name, on condition of a short residence.

In 1684 his father died, and he was presented to a small living by the Lord-Keeper North. Both circumstances increasing his means, he resolved to be at the expense of a new mural arc, upon an assurance from the government (which was never fulfilled) that the outlay should be repaid. This instrument was first used in September, 1689, and from that moment 'every which Flamsteed did, every observation which he made, assumed a tangible and permanent form,' and the public was enabled to submit to science, as he died, the government of the day attempted to claim these instruments as public property.

The public career of Flamsteed, from this time to the close of his life, is described when we say that he collected that enormous mass of observations which form the first trustworthy catalogue of the fixed stars; that he made those lunar observations on which Newton depended for the illustration and verification of his lunar theory; and that he originated and practised methods of observing which may be said to form the basis of the present time. Were it not for the celebrated quarrel between him on the one side, and Newton and Halley on the other, there would hardly be a life of so much utility and fame. Flamsteed, which would afford so little materials for a popular account. It is to be remembered, in the following is an ex parte statement; but on the other hand, it is not one formally drawn up for the public, but partly contained in the manuscript autobiography which never to be published, and partly in the form of letters, in which he communicated with his friends. Many confirmatory circumstances of the general tenor of the facts appear in the letters of Newton himself; and even those who have (since the publication of Mr. Bally's work) defended the character of Newton, have attempted to invalidate the account, but have mostly confined themselves to an attempt to show that Flamsteed did not appreciate the pursuits of Newton. The following is a sketch of the transaction. Newton had been on terms of cordial intimacy with Flamsteed, but a coolness, the cause of which is not discoverable, had begun to exist in the year 1696. In a letter to Dr
Wallis, intended for publication. Flamsteed mentioned his having supplied N., with observations of the moon; this may have taken very little time. In a letter to Flamsteed, I do not love to be printed on every occasion, much less to be dunned and teased by foreigners about mathematical things; or to be thought by our own people to be trifling away my time with them when I should be about the knowledge of astronomy. But Flamsteed's Astronomiae Coelestis Nova, 1725, was printed with all the lunar observations which he had made.

When Flamsteed had compiled his catalogue (having already expended 2000l. more than his salary), he began to think of printing his results. But Prince George of Denmark, in supposing that the same spiriting labour of manufacture and printing, the choice of workmen, &c. was in the hands of the committee, and not in those of Flamsteed. The latter gives the detail of various vexations to which he was subjected, and which occasioned (for the time) in a demand that Flamsteed should give up a manuscript copy of the catalogue of stars, which was the result of the observations, and was intended to be published at the end. This was done, with remonstrances, by Flamsteed; but the catalogue (as much as can be discerned therefrom) declares that he understood it to be kept sealed until the whole of the rest was finished. It was three years before the first volume was printed; and during this time many small circumstances occurred which, if Flamsteed's catalogue had been printed, would probably have marred the most determined intention on the part of the committee to give annoyance. Prince George died in 1708, before the second volume was begun; and the office of the committee was gone; but they still retained the papers in their keeping. Flamsteed, thinking nothing further about immediate publication, applied himself again to his observations. In March, 1710-11, he was surprised by being told that the seal of his catalogue had been broken, and that it was going through the press. Flamsteed immediately obtained an interview with Sir Charles Lords, to show that none of it was printed. This was not the fact; for in a few days Flamsteed himself received several printed sheets, and learned that Halley had publicly exhibited others in a coffee-house, and boasted of the pains he had taken in correcting their errors. The result was, that in 1712 appeared the book known by the name of Halley, and entitled 'Historiae Coelestis libri duo,' &c. Flamsteed, exceedingly irritated by the conduct of Newton and Halley, and being not naturally of a gentle temper, now kept no terms whatever with them. Flamsteed, being a member of a board of visitors for the Observatory (made up of members of the Royal Society), and Flamsteed was summoned to the Royal Society, October 26, 1711, to know if his instruments (his own property) were in order, &c. Here a warm quarrel arose. Flamsteed demanded the seal, to show he had been robbed of his labours, and Newton called Flamsteed various names, of which 'rascal' was the least. Newton reminded Flamsteed that he had received 100l. a year for thirty-six years, and Flamsteed asked Newton what he had had for 500l. a year which he had received since he came to London. Flamsteed charged Newton with having broken the seal of his catalogue, and Newton replied that he had the queen's order. After this interview, Flamsteed resolved to print all his observations, &c. at his own expense, and printed the 175 sheets of observations which were in his hands. The demand was refused, and Flamsteed commenced legal proceedings for their recovery. The result of the suit is not known; but Flamsteed states that he printed the manuscript and was afterwards paid a lump sum to Halley. The additional expense caused to Flamsteed by this act of Newton was about 200l. Queen Anne died in 1714, and the earl of Halifax, Newton's great supporter at court, in 1715. Flamsteed was now without his opponents; and the lords of the treasury, at his request, surrendered all that remained of Halley's edition (about 300 copies out of 400) to his mercy. These he immediately committed (in part) to the flames—sacrifice, he calls it, to truth—reserving only about ninety-seven sheets of each, which had been printed as he wished, and which afterwards formed part of his first volume. From this time to his death, which took place at the end of December, 1719, he was occupied in printing his 'Historia Coelestis' in which, however, he did not live to finish. It was completed by his widow, with the aid of Mr. Crosthwait, his assistant, and his friend the celebrated Abraham Sharp, and was published in 1725. The maps, known by the name of Flamsteed's 'London.' They are comprehended in the maps of Flamsteed, with the result of the former, namely, the British catalogue. The maps seem to us to occupy the same place in practical astronomy which the Principia of Newton holds in the theoretical part.

The singular story of which we have given an outline did not, as might be supposed, appear without comment; but the admiral, Flamsteed, in a supplement to his account of Flamsteed, has condensed all the various replies (if they are to be called) into four, to each of which he has given a rejoinder. To us it seems that the first three of the articles are utterly irrelevant, unless they be demanded as a postulate, that any one had a right to treat Flamsteed in any way which could be proved to be for the good of science.

1. It is said that Flamsteed did not appreciate Newton's lunar theory. Flamsteed, or anything like him, was never raised frivolous and vexatious objections to the printing.

2. That the committee had a right to break the seal of the packet.

3. To which it may be answered, 1. That very few of that day appreciated Newton's lunar theory, and that the same theory, as exhibited in the first edition of the 'Principia' (for the second was not published till after the quarrel), contained several points which were contradicted by observation, or, as Flamsteed says, rejected by the heavens.

4. That it can be proved, from Flamsteed's lists of observations and from the correspondence of both parties, that the latter furnished Newton with every lunar observation which he made; and that were it not so, he was under no obligation to publish Flamsteed's observations. Flamsteed, besides depositing the imperfect catalogue and the 175 sheets of observations, appears, from the whole correspondence and from his subsequent exortations when he began to print for himself, to have been earnestly desirous of publication.

With regard to the breaking of the seal, it is asserted that the contents were public property. This excuse did not occur to the mind of Newton himself, who, according to Flamsteed, only pleaded the queen's order. But the mere refusal to print for some time sufficed to justify the committee; and there seemed to be some understood reason for its not being immediately submitted to the inspection of the committee. If, as we have heard suggested, the deposit was a pledge under the threat that the papers were to be justified in breaking the seal. But supposing it to be so, we may contend that the committee in such a case ought not, as men of honour, to have touched the seal, until they had first ascertained, by the fullest notice given to Flamsteed, that he was unwilling to fulfil the previous stipulation.

It seems to us, on the whole, that the case is rather strong against Newton and Halley, and that their cause has been hurt, since the publication of the preceding details, by the attempt to defend what was done. Newton's high intellect and high moral sense must exist together; and if, as Mr. Baily surmises, fifty years ago the editors of the 'General Dictionary' could not state what they knew of the quarrel from the fear that the exposure of it might injure Newton, we must infer from the recent publication, a gratifying proof of a better spirit.

Among the matters contained in Mr. Baily's preface is a complete refutation of a story derived from a provincial history, that Flamsteed, when very young, was convicted of highway robbery, and that a pardon was granted him. On searching the records, no such pardon is found entered, and various other circumstances make it physically impossible that Flamsteed could have been thus engaged at the time stated. 

FLANDERS, F.A.S.T., a province of the kingdom of Belgium, bounded on the north by the province of Zealand, on the east by South Brabant and Antwerp, on the south by
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Hainault, and on the west by West Flanders. It extends from 50° 42' to 51° 22' N. lat., and from 3° 25' to 4° 20' E. long.

East Flanders is politically divided into six departments, viz.,

Alost, containing 3 towns and 74 communes.

Oudenarde, 2 towns and 55 communes.

Eecllo, 2 towns and 17 communes.

Ghent, 2 towns and 76 communes.

St. Nicholas, 2 towns and 26 communes.

Ternode, 1 town and 25 communes.

11 towns and 273 communes.

The principal towns are Ghent, the capital, Alost, Oudenarde, Deinze, Eecllo, Grammont, Lokeren; St. Nicholas, Ninove, Termonde, and Ternode. (Ghent; Amir.)

Oudenarde; Eecllo; Grammont; Lokeren; St. Nicholas; Ninove; and Ternode.)

Deinze, about 9 miles south-west from Ghent, and 11 miles north-north-west from Oudenarde, near to the western border of the province, is a very ancient town; it was sacked by Count Robert of Flanders in 1316. It contained in 1830 a population of 36,444, living in 546 houses. The town contains two churches, four schools, a town-hall, and a prison. It is a place of much trade, and is celebrated for the quality of the Geneser, which is made in 13 distilleries; a great part of the inhabitants are employed in linen-weaving.

Ninove is situated 20 miles south-east from Ghent, and 123 miles west from Brussels, on the left bank of the Dender, which is a well-built town, containing 916 houses and 4,409 inhabitants. There are two churches and a chapel, a town-hall, an hospital, and ten schools. The principal trades are carried on in grain, flax, linen, and oil; there are four salt-refineries, seven flax-mills, some potteries, tobacco-manufactories, and oil-mills. The town owns a charter given to the Goths, who built the castle in 411: it was enclosed with walls in 1194.

The principal rivers that traverse this province are the Scheldt, the Yse, and the Dender. It is further watered by the Dijle, the Bruse, and the Ter, all of which are tributaries to the Scheldt, and the trade of the province is facilitated by many canals, the most important of which are those from Bruges to Ghent, from Ghent to the Neuzen canal, and the Moerwart canal, which branches off from the last-mentioned canal five miles north from Ghent, and joins the river Durne at Spletterputte.

East Flanders is low and level. In many parts of the province there are beds of peat, which are worked, and supply cheap fuel to the inhabitants, besides which the ashes are used as a dressing for the soil. Animal and vegetable remains, in a state of high preservation, are often found in these peat beds.

The chief productions of the earth are wheat, rye, barley, oats, potatoes, flax, hemp, hops, mustard, and tobacco. There is but little wood of any growth in the province; plantations for fire-wood and hop-poles are of frequent occurrence. Oaks are planted for the sake of the bark, and are cut down before they attain any considerable size.

The draught-horses bred in the neighbourhood of Ghent and Alost are large, well-formed, and powerful animals. Many of these horses are used in London for drawing the drays of brewers. Oxen are seldom used in Flanders for purposes of labour. The province contains 26,000 horses, 120,000 horned cattle, and 35,000 sheep, estimated in round numbers.

The population of East Flanders at the beginning of 1833 amounted to 724,793, of whom 180,813 inhabited the towns, and 541,980 the rural districts. The births and deaths in 1832 were:

Births—Males 12,501

Females 11,976

Deaths—Males 9,226

Females 9,492

18,721

Various manufactures are carried on in the province. Coarse hemp cloths are made by the women and young persons in the country districts. Lace, to which the name of Vaalenciennes has been applied, is made principally at Alost and St. Nicholas. Tulle, or bobbin-net lace, has been introduced of late years. Silk-weaving is pursued at Ghent and St. Nicholas. Cordage, bricks, hats, soap, and woollen-cloths are made in various parts of the province, which also contains numerous potteries, sugar-refineries, distilleries, and breweries. In 1834 there were fifty-seven steam-engines employed in cotton spinning-mills, principally at Ghent.

The civil government of the province is administered by a governor, who resides at Ghent. Courts of assize are held at Ghent, Oudenarde, and Termonde. A court of appeal, which has jurisdiction likewise over the former province of West Flanders, is established at Ghent. That city is also the seat of a bishop. The number of schools in which daily instruction is given is 760, of which 158 are in the towns, and 604 in the country districts. The number of scholars frequenting these schools in February, 1833, was 28,750 boys and 23,427 girls, together 52,177. There is also at Ghent a normal school, supported by the government.

Besides the daily schools there are many in which instruction is given on Sunday; one of these, established in 1810, receives 1400 boys and 1600 girls, at the annual cost of 340f., raised by voluntary contributions.

Flanders, West, a province of Belgium, bounded on the north and north-east by the North Sea; on the east by Zealand and East Flanders; on the south-west by Hainault; on the south, south-west, and west, by France. It lies between 59° 41' and 51° 22' N. lat., and between 2° 33' and 3° 30' E. long.

This province is divided into eight departments, viz.:

Bruges, containing 1 town and 37 communes.

Ypres, 4 towns and 37 communes.

Courtray, 4 towns and 37 communes.

Thielt, 3 towns and 17 communes.

Roulers, 3 towns and 17 communes.

Furnes, 2 towns and 25 communes.

Oudenarde, 2 towns and 25 communes.

Dixmude, a town containing 3189 inhabitants, is situated 16 miles south-west from Bruges, on the right bank of the Yser. This place was no more than a hamlet until 1548, when Baldwin III. caused it to be walled in. It was fortified in 1574, and early in the sixteenth century it enjoyed so many privileges, that great numbers of inhabitants were attracted to it, and it became necessary to enlarge the town.

This place was nearly destroyed by fire in 1553, and a similar calamity befell it in 1513, when the town-hall and more than two hundred houses were burnt. Dixmude contains a fine parish church, a chapel, a hospital, and two orphan-houses. The principal trade consists in agricultural produce, the butter sold there is highly esteemed.

Nieuport, a portified town, but little frequented except by fishermen, is situated about 15 miles north-west from Furnes, and 19 miles south-west from Bruges, with both which places it communicates by means of canals. Nieuport was formerly a hamlet, dependent on the town of Furnes, which was destroyed by a storm in 1116. In the next century the harbour grew in greatness, and little the place took the form of a town, when it received the name of Novus Portus, or Nieuport. It was surrounded by walls and a ditch in the fourteenth century, and was reduced to ruins by the English in 1553, but rebuilt and fortified two years since. It is fortified and contains a small fort or castle, which was besieged in 1488 by the French, and was successfully defended, although three times assaulted by the besiegers.

The battle of Nieuport, in which the Archduke Albert was defeated by Prince Maurice of Nassau, was fought in 1643 near to the town, for it was taken in 1745, 1792, and 1794.

The population at the beginning of 1830 consisted of 30,826 persons, of whom 14,050 were males, and 15,786 females. The town at that time contained 529 houses, of which there is a handsome church, a chapel, a town-hall, two cotton factories, and two orphan-houses.

The fisheries, and especially the herring fishery, is the most considerable branch of industry carried on at Ghent.

Warneton stands on the left bank of the Yse, six miles
south-east from Ypres. This place belonged formerly to a family of the same name with itself, and it was fortified in 1137. At the beginning of 1830 it contained 1152 houses and 5614 inhabitants, of whom 2756 were males, and 2858 females.

Wervick is situated on the left bank of the Lys, by which it is separated from France: it is seven miles south-east from Ypres. The population in 1830 was 5614; viz. 2856 males, and 2863 females. The number of houses was then 959.

The principal rivers of the province are the Lys, the Schelde, and the Yser. The Lys has its source in the department of the Pas de Calais, in France. It enters West Flanders near Warneton, passes in a north-east direction across the southern part of the province, and enters Belgium near Menin. The Schelde forms the south-eastern boundary of the province, separating it from Haïnaut. The Yser rises in the department Du Nord, in France; entering the province of West Flanders near Rouvroy, it flows north-east to Dixmude, and thence north-west to Nieupport, where it joins the sea. There are several other inconsiderable streams in the province, and the communications between different places are facilitated by means of navigable canals: the most important of these are the canals between Ghent and Bruges, Bruges and Dunkirk, Bruges and Nieupport. The coast of the province is constantly threatened by encroachments from the sea, to prevent which unceasing vigilance and activity are required.

The soil of West Flanders is in general sandy, particularly towards the sea. Brick earth, peat, and peat moss, are also found in different places. The sand is in some parts covered with a stratum of vegetable mould, but in most other parts the soil is very light and poor. The whole province is a plain, with scarcely a rising ground to break the flatness of the country. Wheat, oats, rye, peas, turnips, carrots, potatoes, and tobacco, are all cultivated. The quality of the tobacco raised in the neighbourhood of Wervick is much esteemed.

There are considerable woods in the department of Bruges, Ypres, and Courtray, consisting of a part of which the woods belong to the state. The principal trees are the hirch, oak, ash, hornbeam, elm, beech, poplar, pine, plane, lyme, larch, chestnut, and elder. Willows are frequently seen, but always as pollards. The horses of the province are large and heavy, fit only for draught; there are about 24,000 in the province. Of horned cattle there are 13,000, which exceed the wants of the inhabitants. Many oxen are accordingly fattened and sold, and a considerable quantity of hutter is made for exportation. There are about 2000 horses in the province. The population of West Flanders in 1835 was 615,904. The numbers of births, marriages, and deaths, in the preceding year, were as follows:

<table>
<thead>
<tr>
<th>Births—Males</th>
<th>Births—Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>In towns</td>
<td>3,003</td>
</tr>
<tr>
<td>In country</td>
<td>2,446</td>
</tr>
<tr>
<td>Total</td>
<td>1,244</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marriages</th>
</tr>
</thead>
<tbody>
<tr>
<td>In country</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deaths—Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>In towns</td>
</tr>
<tr>
<td>In country</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deaths—Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>In country</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>16,356</td>
</tr>
</tbody>
</table>

A great proportion of the inhabitants of the province are employed in spinning flax, and weaving and bleaching linen. The manufacture is altogether a domestic one, and is carried on in the farm-houses during winter, and at other times when the operations of the field are necessarily interrupted. Damask and table-linen are made in the towns of Courtray and Bruges. Much lace is made at Bruges, Ypres, Courtray, and Menin, the thread for which is spun at Courtray. More than a sixth part of the population of Bruges are said to be engaged in this manufacture, and there are 200 schools in the town in which the art of lace-making is regularly taught. There are in the province 75 establishments for dyeing; the largest are at Courtray, Bruges, Poperinge, and Roulers. Woolen cloths, mostly of homely quality, fitted for the use of the working classes, are made at Bruges, Ypres, and some other parts of the province: the chief centre however is at Bruges.

The principal articles imported are groceries, dyers drugs, metals, timber, wine, and salt; the exports consist chiefly of linens, lace, linseed-oil, rape-oil, gowders, horned cattle, and grain.

* Agriculture. Flanders was remarkable for the cultivation of its soil long before any other country north of the Alps or Pyrenees. This was the natural consequence of its commercial prosperity: and although very little change has taken place, and very few improvements have been introduced for more than a century, it still ranks foremost amongst agricultural countries.

It is not the richness of the soil which is the cause of the abundant harvests which the Flemish peasants reap, but their indefatigable industry. The greater part of the land in Flanders is naturally poor; and in extensive districts, which now have the appearance of the greatest richness at harvest time, the original soil was once little better than the blowing sands which are met with in the neighbourhood of the sea. Neither is it a genial climate which brings down the grain and in the Flanders is as much inferior to that of France or the southern parts of Germany; and if there are not so many or so sudden changes of weather as in Great Britain or Ireland, the winters are longer and more severe. The average temperature in the summer months is a little below that of England. The climate is of a very uniform kind, and is suited to a great number of grain which lie in the same parallels in England, and the time of harvest somewhat earlier; but this does not make a difference of more than a week in the maturity of every kind of grain. The winters are more severe, in ordinary years, and the snow lies longer on the ground.

The soil may be divided into two classes. The first consists of the alluvial clay-loams near the coast; the second, of various sands and light loams which are found in the interior. The most fertile is that of the lowlands which have been reclaimed from the sea by embankments. It is chiefly composed of a muddy deposit mixed with fragments of marine shells and fine sea-sand. These lands are called polders, and their great natural fertility causes them to be cultivated with less art and industry than those lands which are much inferior.

The cultivation in the polders has nothing remarkable to entitle it to much notice. Barley seems particularly suited to the soil, and very heavy crops of this grain are obtained; especially in those polders which, having been more lately reclaimed, are yet unexhausted. Eighty to one hundred quarters per acre have been obtained with little or no manure; and the second crop of barley sown in succession has often been the best. Oats are also very productive and of good quality, from ten to twelve quarters per acre. But the heavy crops soon make the natural fertility fall: after a few years the produce is greatly diminished, and the land requires to be recruited by manure and cleansed by fallows.

The usual rotation of crops in the polders consists of—

1. Winter barley after a fallow. 2. Beans. 3. Wheat. 4. Flax. 5. Clover. 6. Potatoes. If the potatoes have a favourable season, and the land can be cleared of weeds, the rotation begins again without a fallow year: but this is seldom the case, and the land is usually fallowed once in six years. The crops here mentioned are occasionally varied according to circumstances, and manure is well supplied; a small quantity of dung made on the farm will permit. The polder farmer seldom thinks of purchasing manure; and even the ashes made by burning weeds are usually sold, to be sent to the poorer sandy soils, where their effects are more perceptible. They keep a sufficient number of horses to till the land, and often put four to a plough, which is the common turn-wrest plough, there called the Walloon plough.

If this number is not absolutely necessary, they overlook

* The soil of the polders, when first brought into cultivation, gives by analysis the following proportions in its composition:—

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcareous sand</td>
<td>30</td>
</tr>
<tr>
<td>Illuvial sand</td>
<td>25</td>
</tr>
<tr>
<td>Fine clay</td>
<td>25</td>
</tr>
<tr>
<td>Vegetable matter</td>
<td>20</td>
</tr>
<tr>
<td>Soluble matter and loss</td>
<td>20</td>
</tr>
</tbody>
</table>

If this is compared with the soils as classified by Thaler (Anales, vol. iv, page 829), it will be found to resemble his richest soils which he places in his first classes.
the saving which might be effected, and pride themselves on the fat and sleek appearance of their team. No more cows are kept than are necessary for the supply of the family; and for want of winter provender for cattle few oxen are stabled. The dung is mixed in heaps, and turned over before it is taken to the fields. It is not used as manure; and to receive the urine, this manure not being thought so useful in heavy soils as in the light. In short, the agriculture of the polders is far inferior to that of the interior, and not much advanced before that of the other nations in Europe. It is much inferior to that of Kent and Essex on similar soils. When the polders have been too much exhausted they are frequently laid down to grass; and in a few years a very rich pasture is produced. If, instead of sodding over, only a few refuse hay-seeds from the fields, proper grass seeds are used, and have been cut and have been carried to the pasture would much sooner come to perfection, and several years would be saved; but the improved modes of converting usable land into pasture, so advantageously practised in the north of England and in Scotland, are almost entirely unknown. When heaps, or basins, are embanked, the remainder he undertook to cultivate on a joint account with the owner: that is, he did all the work, and the produce was sold on the ground: half of it went to the farmer and half to the landlord. No scheme could be more ingeniously devised for the separation of the profits of the farmer and the landlord. The tenant would pay for the provision of the farms for the benefit of the tenant. The landlord had the soil at the expense of the fruit or seed. The uneclined and the flooded lands were inundated by saline partries, which were allowed to exist, and the whole was kept fresh by the constant influx of sea-water. The land is divided into portions for the benefit of the owner: the men of the supply; but every expedition is resorted to in order to increase the quantity and improve the quality. Every kind of vegetable or animal matter is carefully collected, and made to undergo the putrefactive fermentation in long heaps mixed with sand. The sand is not merely a»seeds which excite heat and putrefaction more than urine when it is poured over substances subject to decomposition. In every farm-yard there is a cavity or pit into which the objects to be acted upon can be thrown, and into which the nitro-reduction of the dung-hill will be frequently moving and stirring the mud, the decomposition goes on rapidly, heat is evolved, and the fibres and juice of vegetables are decomposed, and become soluble in water, in which their effect on vegetation is proved. The place in which this is going on is called aFrancois de Saussure, and in Flemish a sauvour lo. It is generally thought most advantageous that the manure should be ploughed into land in an active state of fermentation, and in order to secure this, it is in some places laid on the ground in heaps, but it is much better to carry the dung in it to be applied to the ground. The same removes the fermentation; and as soon as the hops begin to heat, it is spread out, and the manure is immediately ploughed under.

When the supply of the farm is from the yard and from the canal system, together with what can be purchased, is not sufficient, recourse is had to the refuse cakes of coal from which the soil has been pressed out. These are disposed in urine or in water, and put into the earthen vessels to decompose. When it is in a proper state it is used chiefly on the land on which it has been inclosed, as it is a very rich manure, and perfectly free from the seeds of noxious weeds.

In the tillage of the land the Flemings use few and very simple appliances, and the wheat land is a small light foot-plough, so called from a piece of wood inserted in the beam, which is somewhat in the shape of a foot, or rather of the wooden shoe in common use in France. It has no wheels, and is drawn by one or two horses. It is not ploughed into the land, but is left to run over a part of the improved ploughs for light soils are derived. The most perfect plough for light lands, acting like a shovel at the top part of the turn-furrow, which is concave, and completely turns over the soil. In the stiffer soils the furrow is sometimes left without a furrow, and is lighter than the heavy Wallon plough. It has two small wheels attached to that part of the beam where a single wheel is sometimes put by means of a small iron bar, which is connected with the middle of the axle by means of a spring. The furrow is then turned, and the soil brought nearer to the surface of ground, or by one of the wheels running on the furrow, this bar always remains upright, and supports the end of the beam. This plough is much steadier than

FLEMISH, of which a drawing and description are given in vol. iii. p. 9. [Barren Land.] The next step is to procure liquid manure, which consists of the urine of cows, horses, the drainings from ditches, and the excretions of privies. The numerous towns and villages where human excreta are so freely dispersed render the country in all directions, facilitate the collecting and transporting of manure. A regular trade is carried on in everything which can enrich the land; nothing which can be of any use for this purpose is lost or wasted. In every farm there is a large vaulted eartenn, in which the manure is collected, and where it is occasionally stirred by excite fermentation, and make it more efficacious when it is carried upon the land.

Experience has taught that manure put on light land is of a much greater value by a bulky addition than the solid dung is ploughed in, but that its effects are much less durable. This has led to the practice of frequently renewing the manure, and pouring the liquid over the growing crops as a top-dressing. Considerable care is required to give the proper quantity, and to regulate the strength according to circumstances; for too great an amount might destroy the crop, or produce great luxuriance on the land at the expense of the fruit or seed. The urine and other hot substances impregnated with saline particles are therefore diluted, if the weather is dry, before they are used, or they are poured over the soil some time before the seed is sown, that they may sink in and be more diffused.

At a distance from large towns it would be impossible to obtain the requisite quantity of manure, and accordingly it is carried for a distance to the farm, and the quantities of the supply; but every expedition is resorted to in order to increase the quantity and improve the quality. Every kind of vegetable or animal matter is carefully collected, and made to undergo the putrefactive fermentation in long heaps mixed with sand. The sand is not merely a sand which excite heat and putrefaction more than urine when it is poured over substances subject to decomposition. In every farm-yard there is a cavity or pit into which the objects to be acted upon can be thrown, and into which the nitro-reduction of the dung-hill will be frequently moving and stirring the mud, the decomposition goes on rapidly, heat is evolved, and the fibres and juice of vegetables are decomposed, and become soluble in water, in which their effect on vegetation is proved. The place in which this is going on is called aFrancois de Saussure, and in Flemish a sauvour lo. It is generally thought most advantageous that the manure should be ploughed into land in an active state of fermentation, and in order to secure this, it is in some places laid on the ground in heaps, but it is much better to carry the dung in it to be applied to the ground. The same removes the fermentation; and as soon as the hops begin to heat, it is spread out, and the manure is immediately ploughed under.

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the foot-plough, and better adapted to break up very stiff ground.

An instrument peculiarly Flemish is the trainée. This is a frame of a triangular shape, covered with boards, which is drawn round to smooth the surface and press in the seed. The harrows in common use are also triangular, and made entirely of wood; the pins are driven obliquely and point forwards, so as readily to enter into the ground when the harrows are drawn by the angle. The body of each harrow is flat, and the more on the side from which they are driven in: thus, by reversing the instrument, a slighter degree of harrowing is given, which has an effect intermediate between that of the harrows and the lower ploughs.

The mollebeert, another Flemish instrument for levelling ground, has been already noticed. The Hainaut scythe and hook are generally used for resaping corn. The instrument is held in the right hand, and the hook in the left; by a swing of the arm the corn is cut close to the ground towards that which is standing; the hook collects it and rolls it up into a sheaf, which is taken up by means of the leg and the scythe, and laid down to be tied. It is better than a faggging-hook, and does the work more easily. These are the only instruments in common use which differ at all from those of other countries. None of the more complicated modern inventions have been introduced, nor would they be readily adopted, however ingenious or useful they might be; for an adherence to old established methods, and a clinging to the locality where so firmly rooted as amongst the Flemish peasants.

The most important instrument in Flemish agriculture is the spade, which is used to a much greater extent than in England; and in some instances is the only instrument of tillage. The spade is made very light and long, and is well adapted to the loose sandy soils. The first step to improvement is generally a complete and deep trenching; and in the Waas district a sixth part of the whole farm is trenched every year; and where this is not done, the intervals between the stitches in which the land has been ploughed are dug out with the spade a foot or sixteen inches deep, and the earth thrown evenly over the beds in which the seed has been sown. By shifting these intervals a foot every year, the whole of the land which lies in stitches six feet square is turned, and attention is paid to every part. This process is extremely useful in producing an even crop, especially of flax, the roots of which strike deep.

The rotations adopted in light sands and loams are various. In the poorest and least improved, buckwheat, rye, and clover, chief crops, with potatoes and clover, which require more manure. Every crop is manured except buckwheat, which grows well in the poorest soils, and becomes too luxuriant to give much seed in rich and highly manured lands. Beans have not been introduced except by way of experiment, and are not in the same general use as in England; some are turned into potatoes, and the land covered with the plough: they are always earthed up round the stems, sometimes by a plough with a mould-board on each side, but generally by hand with a broad hoe. The manure usually put on the land in which potatoes are to be set is double the quantity used for a corn crop; and a good soaking of the soil with urine is thought to invigorate the growth of the plant greatly. The produce however is not much more abundant than it is usually in those parts of England where potatoes are raised in considerable quantity, and in the fields—about 300 bushels on an acre.

Beans are not a favourite crop, and are not carefully cultivated. They are sometimes sown very thick, mixed with peas and tares, to be cut up in a green state for the cows and pigs; and in this way they produce a great quantity of

the class of light loams, wheat recurs more frequently, and the rotation is varied as follows:—rye and turnips, potatoes, wheat, rye and turnips, oats, flax, clover, wheat. If the soil is fit for barley, this grain is substituted for rye. The cassava or yucca species are frequently grown in the barley, and also in the flax. They strike deep into the rich light earth, but come to no size while the principal crop is on the ground. As soon as this is taken off, the land is harrowed and carefully weeded by hand: liquid manure, diluted if the weather is warm, and warm, water is also thrown over the land, and the timbers throw out their green tops, and swell in the ground: by the end of September a considerable number of them may be dug up. The best variety for this purpose is a large white carrot, which, rising some inches out of the ground: it has usually been lately brought to the land, and will no doubt soon be more generally cultivated. [CARROT] There is another variety which is yellow, and also attains a good size; but it is inferior to the first in good ground. The quantity of manure is increased for the winter production of the cassava is considerable and forms an important part of the husbandry of Flanders, where all the cattle are constantly kept in the stables in winter, and, except where there are natural pastures, in the summer also.

Flax is everywhere a most important crop, for it much exceeds all other crops in value. When it can be grown of a tolerable quality, every other crop has a reference to this; and the rotation is arranged accordingly. There is no country where more attention is paid to flax in Flanders, especially in the vicinity of the city.

The land is brought into the highest state of richness and cleanliness before flax is sown in it; and the most abundant manuring with rape cake and urine is thought essential to raise this crop in perfection. [FLAX].

On the heavier loams, [COLT], is an important crop for the seed from which the oil is expressed. It is sown in a bed in July or August, and planted out in rows two feet apart in October. The seed ripens early in the next summer, and a good crop of turnips may be had after it. The manure usually put on the land in which potatoes are raised is mixed with clover, which is turned into the earth when the land becomes stony: as such land is turned into the earth in the course of time, it is left for another year. It is turned twice after cutting, and ploughed and harrowed in the second year. They are thrown up with the aid of a dibble, and left to the earth in the fields—about 300 bushels on an acre. There is a small yellow potato in Flanders, which is excellent when boiled, and which grows well in a stiff loam, but it is not so productive as the large cabbage potato.

The cultivation of this crop has by no means been resumed lately, after it had been entirely abandoned. There are now several considerable manufactures of beet-root sugar, but it is not a favourite culture with the farmers, not even for their cattle, as it is too long on the ground. They prefer manures and even a few acres of light land which has borne another valuable crop the same year.

In the heavier loams, which are chiefly to be met with in West Flanders and about Alost, the following rotation is adopted:—flax, clover, barley or oats, beans, wheat, rye and turnips, potatoes, clover and raised in considerable quantity in the fields—about 300 bushels on an acre.

Beans are not a favourite crop, and are not carefully cultivated. They are sometimes sown very thick, mixed with peas and tares, to be cut up in a green state for the cows and pigs; and in this way they produce a great quantity of
green food, and clean the ground by excluding the air and smoothing the woods. On a farm of 36 bonnies, in a very good sandy soil near Courrèze, the land was divided into 3 equal parts of 12 bonnies each, and the crops were distributed as follows:—

<table>
<thead>
<tr>
<th>Crop</th>
<th>Wheat</th>
<th>Beans</th>
<th>Oats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rye</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>&amp;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The manure used for these crops was partly dug from the yard and cows' urine, but chiefly the sweepings of the streets and the emptings of privies from Courrèze.

In a very rich farm, not far from Ypres, the following crops were noticed in regular rotation:—1. turnips with chicory and carrots; 2. oats; 3. clover; 4. wheat; 5. flax; 6. rye; 7. beans; 8. wheat; 9. potatoes; 10. wheat; 11. oats. All these crops are of an exhausting nature, and it requires a very rich soil, aided by abundant manuring, to bear this portion for any convenience; but each of these crops had a good portion of manure.

Great attention is paid to prevent the land so as to secure a good crop from a small quantity of seed. The seed usually sown in Flanders is about one-third less than in England, even when the seed is drizzled, which it never is in Flanders. The ground is rendered softer and richer by the tilling and the liquid manure; and the seed, which has been carefully selected, is covered by earth spred ad over it with the spade: it is afterwards rolled or trod in with the feet. Every grain vegetables, and should there be any looseness in the growth, the urino tank supplies an excellent stimulant. It is in the springing of the blade, after the farina in the seed is exhausted, that the liquid manure seems to produce the greatest effect. When the stem is shot up, it may perhaps too much encourage the increase of green leaves, and thereby hinder the formation of the flower and the seed; experiments made with liquid manure lead to this conclusion.

There are some very rich pastures in Flanders about Furnes and Dixmude, where excellent butter is made. A great many beasts are fed in the summer, and a modest stock of cattle is pastured in good conditions. In April or May will often on an acre of land by August or September. The best cows and oxen are of the Dutch breed; those which are bred in Flanders are inferior. The butter about Dixmude is churned from the cream only, although the most common practice is to turn the whole milk after it has stood some time and begins to be acid. It is always set in shallow pans immediately after milking, and left so twelve hours. The cream is then skimmed off, and the whole milk is poured into deep vessels, till it is fit to be churned. The churning is performed in a barrel-churn or a plunger-churn: in either case, in the larger dairies, it is moved by a horse, which turns a wheel connected with the churn.

The breed of horses in Flanders is large and heavy, but deficient in activity and clumsy in form. The mast are mostly in repute for heavy carriages, but present an equipage drawn by Flanders mares would be an object of wonder, not of ridicule. Many horses have been imported into England from Flanders as cart horses; but they were preferred chiefly on account of the price at which they could be obtained, and of the apparent bulk of them. For active and enduring qualities they are much inferior to our best breed of English cart horses.

The Friesian sheep are coarse in wool, and much inferior to the Lowlands in South Down. Some good sheep have been imported which may much improve the native breeds. The pigs are as badly shaped as can well be imagined: long in the neck and head, and high on their legs. They are badly fed when young, and fattened slowly, although in time they acquire considerable weight. A better breed has been introduced which will soon supplant the old.

The farm buildings are very large and convenient in general. The farms are small, compared with those in other countries; 12 acres is considered a very considerable portion. In the Waas country where the space is extensively used in the cultivation of the land, the farms are very small, fifty acres being amongst the largest, and the average not above fifteen. A farm of this description requires only one horse to cart the manure and plough the land; four or five cows are the usual complement, with two or three pigs. The cows are on clover in summer, and on bales of cut grass in winter on potatoes, beer-turnips, carrots, which are chopped up together and kept in a hopper. This is given milk warm three times a day, and is called brasse; when grains can be procured from the brewers, they are added to the mess. The cows never mare from their stalls after having had three or four calvings. A cow is generally fattened and sold off, and a young calf, of which a couple are reared every year, supplies her place.

**FLAX (Linum usitatissimum)**

**FLAT, in music, a character originally represented by a small h, though time has somewhat altered all its use, and the following is now its form.**

When a Flat does not appear at the clef, occurs in any other part of the composition, it only affects the bar in which it is placed, and is called an **Accidental Flat**.

**The DOUBLE FLAT** is frequently employed in very chromatic music. It lowers a note two semitones below its natural state.

**FLAX (Linum usitatissimum)** is, in fact, a *natural*, &c. This character is used chiefly in Euharmonic modulation [EXHARMONIC], in which it is practically convenient, if not absolutely necessary, occasionally to have an additional note for each note in the distance and in April or May will often on an acre of land by August or September. The best cows and oxen are of the Dutch breed; those which are bred in Flanders are inferior. The butter about Dixmude is churned from the cream only, although the most common practice is to turn the whole milk after it has stood some time and begins to be acid. It is always set in shallow pans immediately after milking, and left so twelve hours. The cream is then skimmed off, and the whole milk is poured into deep vessels, till it is fit to be churned. The churning is performed in a barrel-churn or a plunger-churn: in either case, in the larger dairies, it is moved by a horse, which turns a wheel connected with the churn.

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rods; by having these lengthways and others across them at right angles, a kind of large net is spread over the whole field, and none of the flax can possibly lie flat. By using cheap rope or strong tar twine from old cables, the expense is nil. The crop, and soon is taken up by the rods. When the flax is pulled, the seed and stalks are removed, and the straw is dried up, and removed to a dry place till they are wanted again.

The most common variety of flax is of a moderate length with a stronger stem: if it is not sown very thick it will make a better branchless and productive flax, and is therefore a matter of calculation whether it will be most profitable to have finer flax with less seed, or an inferior quality with an abundance of seed.

There is a small variety which does not rise above a foot, grows fast, and ripens its seed sooner. When sown in the seed, and with one-third of manure, this variety is preferred; but the flax is shorter and also coarser.

Another variety of flax has a perennial root, and shoots out stems to a considerable height. It came originally from Siberia and was much recommended at one time, but its cultivation did not spread. If it were sown in wide rows and kept free from weeds by hoeing, it might perhaps be profitably cultivated for the seed; and if the flax is inferior in quality, it might still be of some value for coarse manufactures; it requires however to be renewed every three or four years.

The soil best adapted to the growth of flax is a deep rich loam in which there is much humus, or vegetable mould. It should be mellow and loose to a considerable depth, with a sound bottom, neither too dry nor too moist: either extremely wet or excessively dry are injurious. If the soil is neither too hot gravelly soils or cold wet clays, but any other soil may be so tilled and prepared as to produce good flax. It thrives well in the rich alluvial land of Zealand and the polders, but it is also raised with great success in the light sandy soils of Flanders. It is most cultivated in Essex, including two winters and a summer, by a good preparation on the heavier loams, which should be trench-ploughed and worked deep; the manure should be dung fully rotten, or a compost of earth and dung; it should be put on the land in autumn, and well incorporated before the seed is sown. If the land is sufficiently clean, a crop of potatoes well manured may be substituted with advantage for the fallow; but at least double the usual quantity of dung should be given to this crop that enough may remain in the soil to fertilize the later crops; if the soil contains a great portion of clay; but in the lighter loams there is some doubt of its advantage for flax. At all events it should not be used immediately before the flax is sown, but for some previous crop. Fertile ashes are excellent for this purpose. When the furrows have been put down, the seed should be sown the same day, or at least not a day or two later than the sowing of the flax, for if not thus sown the seed is apt to injure the roots of the flax. For want of potash, those made by the burning of weeds and earth in a smothered fire are a good substitute. But the most effective manure is the sweepings of the streets and towns mixed with the emptying of privies and houses emptying out of the butchers' stalls and shambles. On light soils most manure is required; and where night soil cannot be obtained in sufficient quantities, rape cakes, from which the oil has been expressed and dissolved in water, form the best manure. In many parts of Flanders 3000 to 4000 lbs. of this manure per acre of flax, besides the usual quantity of Dutch ashes and of liquid manure, which is the drainings of dung-hills and the urine of cattle collected in a cistern and stored. This manure is preferable to the more expensive one, and at the same time is cheaper and more available. It has therefore been extensively used.

In northern climates flax is sown before winter, because too great heat would destroy it. It is then pulled before the heat of summer. In northern climates the frost, and especially the alternations of frost and thaw in the early part of summer, are injurious; a shelter from wind is a great benefit; the seed may therefore be sown as early in spring as may be, so as to avoid the effects of hard frost. This is in March or April in Great Britain and Ireland, and in Holland and Flanders. In no country is the ground better prepared for the growth of flax than in Flanders; and yet there may be seen early as early as May, or as late as we have seen in the month of July. This is done after the whole process of Flemish cultivation for several crops preparatory to that of flax, which is the most important produce in that country, and that which, when well managed, gives the greatest profit to the farmer. The best flax grows near Courtray. The soil is a good deep loam, rather light than heavy. It is not naturally so rich as the soil of the polders in Flanders and in Zealand, but the tillage and cultivation are far more perfect, and the produce, if not made too rich, is more abundant. One preceding crop has a reference to the flax, and is so cultivated as to improve the texture of the soil, which is abundantly manured in order to leave a considerable surplus in the ground. If the land has not been trenched all over with the spade to the depth of eighteen or twenty inches it has been equally well stirred by the narrow open drains which are dug out twelve or fifteen inches deep every year between the stitches in which it is laid by the plough. These drains, or water-furrows, are a foot wide, and from a foot to eighteen inches deep. The furrows are left open, are kept out of water, and the land over the land after the corn is sown. When the ground is ploughed again, care is taken that the place of these water-furrows shall be shifted a foot on each side. Thus in six years the whole soil is deepened and thoroughly mixed with whatever manure has been put on. This produces the same effect as trenching, and even more perfectly. The whole of the land in which the best flax grows has been so treated for several generations, and may he looked upon as a species of compost eighteen inches deep. Potatoes or colza are usually planted with the flax, and the whole is manured with two or three inches of compost, or brush-barrow, and sown. It is then left exposed to the weather, and the depth of the compost is usually increased by a spade or a plough, and another layer of compost is sown. This process is repeated every year, and the depth of the compost is increased by a foot each year. As soon as the compost is five feet thick, the land is ploughed, and more compost is spread, and the whole is loosened by the plough and manure. The land is then ploughed in stitches before winter, some manure having been previously spread over it if necessary; and it is left exposed to the mollifying effects of frost and snow. As soon as the winter is over and the snows melted the land is ridged and prepared for the seed. It is then further divided and pulverized: the surface is laid as level and smooth as possible; and if there is no fear of too much wet, which in this rich loam soon disappears, the whole is laid flat and level as a bowling-green, or else divided into strips of a foot and a half wide, and ridges of half a yard. If any liquid manure is poured out, or the urine, or the rapecakes, as mentioned before. The harrows are drawn over the land, and it is left so a few days that the manure may sink in. It is then again harrowed and the lined seed is sown broadcast by hand, at an average of about one hundred weight and a half to the acre. A hush-barrow or a hurdle is drawn over, merely to cover the seed, which would not vegetation if it were buried half an inch deep. According to the state of the land it is rolled over, or the seed is merely pressed in. It is then sown with fine seeds in gardens. This is only in the lightest soils. Most commonly the transeuse is drawn over the land. This is a wooden frame with boards nailed closely over it, which is drawn flat over the ground to level and smooth it. It is also used at times for the seed, or the rape-cakes, or with the liquid manure, if the manure is too dry. It is therefore well to mix soil, or with them also some weeds. As soon as the flax is a few inches high the weeds are carefully taken out by women and children, who do this work on their knees and hands, both to see the weeds better and not hurt the flax with their feet. They tie coarse pieces of cloth round their knees, and creep on with their face to the wind, if possible. This is done that the tender flax, which has been bent down by creeping over it, may be assisted by the wind in rising. This shows what minute circumstances are attended to in this process. The weeding is repeated till the flax is too high to allow of it.

The seed which is used is generally obtained from Riga, it being found that the flax raised from home-grown seed is inferior after the second crop. But, in the meantime, it maintains that if a piece of ground were sown thin with lineseed so that the flax could rise with a strong stem, and branch out, and if the seed were allowed to ripen, the Flemish seed would be as good as that from Riga; but it still remains to be proved whether it would be cheaper to raise it or to import it.

When the flax begins to get yellow at the bottom of the stem it is time to pull it, if very fine flax is desired, such as is made into thread for lace or fine cambic; but in the country in which it is grown and cultivated, it is generally left standing until the capsules which contain the seed are fully grown and the seed formed. Every flax-grower judges for himself what is most profitable on the
whole. The pulling then begins, which is done carefully by small handful at a time. These are laid upon the ground to dry, two and two obliquely across each other. Fine weather is essential to the part of the operation. Soon after this they are collected in large bundles and placed with the root end on the ground, the bundles being slightly tied near the seed end: the other end is spread out so that the air may have access, and the rain may not damage the flax. When sufficiently dry they are tied more firmly in the middle, and stacked in long narrow sticks on the ground. These stacks are built as wide as the bundles are long, and about eight or nine feet high. The length depends on the crop; they are seldom made above twenty or thirty feet long. If the field is extensive several of these stacks are formed at regular distances. They are carefully thinned at top; and the ends, which are quite perpendicular, are kept up by means of two strong poles driven perpendicularly into the ground. These stacks look from a distance like short mud walls, such as are seen in Devonshire. This is the method adopted by the Saxon after the dressing till another season. Some carry the flax as soon as it is dry under a shed and take off the capsules with the seed by rippy loun, which is drawing the flax through an iron comb fixed in a block of wood: the capsules which are too large to pass between the teeth of the comb are thus broken off and fall into a basket or on a cloth below. Sometimes, if the capsules are brittle, the seed is beaten out by means of a flat wooden bat like a small cricket bat. The bundles are held by the root end, and the other end is laid on a board, and turned round with the left hand, while the right hand holds the bat breaks the capsule, and the flax falls on a cloth below. The flax is then immediately steeped; but the most experienced flax-steepers defer this operation till the next season. In this case it is put in burlaps, and the seed beaten out at leisure in winter. When flax is boxed, care must be taken that it be thoroughly dry; and if the seed is left on, which is an advantage to it, mine must be guarded against, for they are very fond of linseed, and would soon take away a good share of the profits by their depredations.

Steeping the flax is a very important process, which requires experience and skill to do it properly. The quality and colour of the flax depend much on the mode of steeping: and the strength of the flax may be injured by an injurious mode of performing this operation. The object of steeping is to separate the bark from the woody part of the stem, by dissolving a glutinous matter which causes it to adhere, and also destroying some minute vessels which carry the long fibres, and bind them together in a kind of web. A certain fermentation or imperfect putrefaction is excited by the steeping, which must be carefully watched, and stopped at the right time. The usual mode of steeping is to place the bundles of flax horizontally in shallow pools or ditches of stagnant water, keeping them under water by means of poles or boards with stones or weights laid upon them. Water nearly putrid was supposed the most efficacious, and the mud was often laid over the flax to accelerate the decomposition; but this has been found to stain the flax so that it was very difficult to bleach it or the linen made from it afterwards. The method adopted by the steepers of Courtenay, where steeping flax is a distinct trade, is different. The bundles of flax are placed alternately with the seed end of the one to the root end of the other, the latter projecting a few inches: as many of these are tied together near both ends as form a thick bundle about a foot in diameter. A frame made of oak rails nailed to strong upright pieces in the form of a box 10 feet square and 4 deep, is filled with these bundles set upright and closely packed. The whole is then immersed in the river, boards loaded with stones being placed upon the flax till the whole is sunk a little under the surface of the water. The bottom does not reach the ground, so that the water flows over and under it. There are posts driven in the river to keep the box in its place, and each steepener has a certain portion of the bank which is a valuable property. The flax takes somewhat longer time in steeping in this manner than it does in stagnant and putrid water, and it is asserted by those who adhere to the old method that the flax loses more weight; but the colour is so much finer that the flax is sent to be steeped in the Lys from every part of Flunderns. When it is supposed that the flax is nearly steeped sufficiently, which depends on the temperature of the air, the flax being sooner steeped in warm weather than in cold, it is examined carefully every day, and towards the latter part of the time several times in the day, in order to ascertain whether the fibres readily separate from the wood the whole length of the stem. As soon as this is the case the flax is taken out of the water: even a few hours more or less steeping than is necessary will make a difference in the value of the flax. If it is not steeped enough, it will not be easily scutched, and the wood will adhere to it. If it has been too long in the water its strength is diminished, and more of it breaks into tow. The bundles are now untied, and the flax is spread evenly in rows slightly overlapping each other on a piece of clean smooth grass which has been mown or fed off close. Fine weather is essential to this part of the process, as rain would now much injure the flax. It is occasionally turned over, which is done deliberately by pushing a long slender rod under the rows and taking up the flax near the end which overlaps the next row and turning it quite over. Thus, when it is all turned, the fibres are overlapped as in the easiest direction. It remains spread out upon the grass for a fortnight, more or less according to the season, till the woody part becomes brittle and some of the finest fibres separate from it of their own accord. It is then taken up, and as soon as it is quite dry it is tied up again in bundles, and carried into the barn to be broken and heaped at leisure during the winter.

In the domestic manufactures the flax is broken or scutched at home, when the weather prevents out-door work. The common brake consists of four wooden swords fixed in a frame, and another frame with three swords which lay in the interstices of the first by means of a joint at one end. The flax is taken in the left hand and placed between the two frames, and the upper frame is pushed down briskly upon it. It breaks the flax in four places, and by moving the left hand and rapidly repeating the strokes with the right the whole flax is at once broken and scutched. The broken flax held in handful in the left hand is in, sorted in this slit, so as to project to the right, and a flat wooden sword of a peculiar shape is held in the right hand.
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hand; with this the flax is repeatedly struck close to the upright board, while the part which lies in the slit is continually changed by a motion of the hand from the upper to the lower part. This operation beats off all the pieces of the wood which still adhere to the fibre, without breaking it, and after a short time the flax is cleared of it and fit to be heckled. But the operations of breaking and scutching are tedious and laborious when either by hand or by machine, when large quantities of flax are required for manufactures), having three fluted cylinders, one of which is made to revolve by horse or water power and carries the other two round. The flax plants are passed between these cylinders while thus travelling, and then it is thinned, as it is technically called, by this means completely broken without injuring the fibres. The scutching is accomplished in the same mill by means of four arms projecting from a horizontal axle, arranged so as to strike the hoon in a slanting direction until the bark and other useless parts of the plant are beaten away. In the last process by which the flax is prepared for the spinner, the heckling, the instrument employed, called the heckle, is a square piece of wood studded with rows of iron teeth about four inches long and disposed in a quincunx order. The fineness of the heckle is chosen with reference to the quality of the flax, and heckles differing in this respect from each other are used at different stages of the dressing, the coarsest first, and the finest to give the last degree of consentation. This operation of heckling is performed by the workman grasping a handful of flax by the middle and drawing first one side or end and then the other through the teeth of the heckle until every particle of extraneous matter is removed, and the whole of the flax is broken up. Within the last thirty years, the quality of the flax imported has been again exported in the form of linen yarn; and this, according to present appearances, is likely to become a considerable branch of our export trade. The quantity and declared value so exported in each year from 1831 to 1836 have been as follow:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Exported,</th>
<th>Taken for home use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>352,389</td>
<td>17,866</td>
</tr>
<tr>
<td>1821</td>
<td>498,544</td>
<td>8,773</td>
</tr>
<tr>
<td>1822</td>
<td>610,166</td>
<td>7,282</td>
</tr>
<tr>
<td>1823</td>
<td>555,287</td>
<td>9,173</td>
</tr>
<tr>
<td>1824</td>
<td>743,531</td>
<td>11,677</td>
</tr>
<tr>
<td>1825</td>
<td>1,055,233</td>
<td>7,571</td>
</tr>
<tr>
<td>1826</td>
<td>688,826</td>
<td>9,856</td>
</tr>
<tr>
<td>1827</td>
<td>907,097</td>
<td>6,331</td>
</tr>
<tr>
<td>1828</td>
<td>952,916</td>
<td>6,899</td>
</tr>
<tr>
<td>1829</td>
<td>922,040</td>
<td>8,580</td>
</tr>
<tr>
<td>1830</td>
<td>944,096</td>
<td>3,633</td>
</tr>
<tr>
<td>1831</td>
<td>936,411</td>
<td>10,418</td>
</tr>
<tr>
<td>1832</td>
<td>925,316</td>
<td>15,924</td>
</tr>
<tr>
<td>1833</td>
<td>911,722</td>
<td>16,259</td>
</tr>
<tr>
<td>1834</td>
<td>740,814</td>
<td>12,255</td>
</tr>
<tr>
<td>1835</td>
<td>1,529,116</td>
<td>16,789</td>
</tr>
</tbody>
</table>

Up to the year 1825, the duty charged upon foreign grown flax was, by statute, 10s. 14d. and, when under dressed, 5d. per cwt. In the year just named both kinds were subjected to the same rate of duty, which was then fixed at 4d. per cwt.; and this rate was further reduced to 3d. per cwt. in 1826, to 2d. in 1827, and to 1d. per cwt. in 1829, at which rate it has since continued.

More than two-thirds of the whole quantity of flax imported come from Russia; the remainder is supplied by Prussia, Holland, and Belgium, with the exception of a small quantity brought from France. Within the last fifteen years, the quality of the flax imported has been again exported in the form of linen yarn; and this, according to present appearances, is likely to become a considerable branch of our export trade. The quantity and declared value so exported in each year from 1831 to 1836 have been as follow:—

<table>
<thead>
<tr>
<th>Year</th>
<th>Exported,</th>
<th>Taken for home use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>110,188</td>
<td>8,705</td>
</tr>
<tr>
<td>1833</td>
<td>933,682</td>
<td>72,006</td>
</tr>
<tr>
<td>1834</td>
<td>1,537,355</td>
<td>135,172</td>
</tr>
<tr>
<td>1835</td>
<td>2,611,215</td>
<td>216,635</td>
</tr>
<tr>
<td>1836</td>
<td>4,574,504</td>
<td>138,772</td>
</tr>
</tbody>
</table>

A small part of these exports are taken by Germany; but the great bulk of the shipments are made to France, the value of the flax exported to that country being by far the largest, and the operations of our spinning-mills at the rate of more than 100l. per ton. The improvements introduced into the flax-mills of this country, and which have led to the opening of the trade in question, may be explained by the fact that the average length of yard of flax was, in 1815, 11,170 yards, while the length of yarn of the average quality now produced from a pound of flax is 11,770 yards. Some yarns are now produced of a fineness much superior to this average; and it is of such fine yarn that the shipments to France consist. Flax-spinning is now carried on with most success in the West Riding of Yorkshire. Machinery for the purpose has lately been put up in Ireland; but hitherto the quantity spun has not equaled the demand of the Irish linen manufacturers, for whose use large quantities are sent from England.

A considerable part of the fine yarn used by our weavers was formerly imported from Germany. This trade has of course declined since our spinners have begun to supply foreign countries with quantities of flax of the average degree of fineness. In 1814, only 3,300 yards, while the length of yarn of the average quality now produced from a pound of flax is 11,770 yards. Some yarns are now produced of a fineness much superior to this average; and it is of such fine yarn that the shipments to France consist. Flax-spinning is now carried on with most success in the West Riding of Yorkshire. Machinery for the purpose has lately been put up in Ireland; but hitherto the quantity spun has not equaled the demand of the Irish linen manufacturers, for whose use large quantities are sent from England.

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FLAXMAN, JOHN. York may claim the honour of being the birth-place of this very eminent sculptor, he having been born in that city, July 14th, 1735; yet he may properly be considered a disciple of the artist Willaerts, for he was brought to London while yet an infant not more than six months old. At that time his father, who was a moulder of figures, kept a shop in New Street, Covent Garden, and subsequently in the Strand; and it was in this humble studio that the future artist received the first impressions...
of taste. In all probability it was not an unfortunate circumstance that a natural weakness of constitution and delicacy of health, which continued until about his tenth year, gave him a relish for solitary and sedentary amusement. That it was a fortunate one for him to thus early and constantly before his eyes objects adapted to fix his feelings, and thus to train towards him the habits, the dispositions, and the industry that would afterward be so advantageous; that this reason is it that the self-taught, among whom Flaxman may to a certain extent be ranked, are generally found to apply themselves to whatever may be their pursuit with a zest and an earnestness that never accompany routine.

When a child of his mother, and to his brother with such tenderness as to win their affection and esteem. It was somewhere about this period that having attracted the notice of the Rev. Mr. Mathew, he was introduced by that gentleman to his wife, a lady of very superior accomplishments, who took delight in making him acquainted with the beauties of Homer and Virgil, while he would attempt to embody with his pencil such poetic images or parts of the narratives as came to his fancy. He was, and not unjustly, among his friends he was encouraged to study the original languages; and although here also he was chiefly his own tutor, he made such proficiency as enabled him to read the master poems of antiquity, if not very critically, yet with tolerable readiness; so that it is their spirit and genius which follow their conceptions, as is evident from his compositions after Homer and Aeschylos.

Choice of profession for him was none, both nature and circumstances having so determinedly predetermined him for that which any one to whom the mind of his following any other pursuit would have been absurd. Accordingly, in his fifteenth year, he became a student of the Royal Academy, and in 1770 exhibited, as his first subject there, a figure of Neptune in wax. Here, while he diligently applied himself by the assistance he solicited his studies, he received a lesson which taught him that application and enthusiasm combined are not always a match for meddle-wittedness when backed by favour; for on his becoming a candidate for the gold medal (the silver one he had previously carried off), Reynolds, the then presiding, awarded the prize to Engleheart, a now utterly forgotten name. Mortified, yet not dissuaded, Flaxman returned to his studies, with unabated relish, although for some time compelled to leave them on a considerable occasion for providing for the commencement of the passing day, which he did without the advantage of his dexterity in wax-modelling and modelling for others, particularly for the Wedgewoods, to whom his talents and his taste were eminently useful. Moderate as it was the remuneration, such employment put his mind into a new channel of pecuniary circumstances, because he already possessed on a very important fund towards pecuniary independence, namely a contented frugality and an utter dilapidation of all expensive habits and amusements. And here it may be observed, that even in after-life, when he was in imperturbable affluence, and even in the days when he had been a passport to the most brilliant circles, he continued to distinguish himself by perfect simplicity in his habits and mode of living, equally remote from affectation on the one hand and a spirit of penuriousness on the other.

In this latter respect he stood in direct contrast to a connective of the class of the cultivated, whose life through was money-making, and who was fortunate enough to amass upwards of 200,000l., so that he had the death-beded consolation of dying rich enough to make the world believe he had made it. Very far from the character of Flaxman: enthusiast as he was in his art, he would never have got on in it as a mere profession.

The year 1782 formed an important epoch in his life, since not only did he for the first time quit his paternal residence in the Strand, and venture to himself in a house in Wardour Street, but was guilty of what Reynolds at least considered the highest imprudence.

"So, Flaxman," exclaimed the latter to him one day, "I am told you are married,—if so, Sir, you are ruined for an artist! Yet never was there so ugly a less veracious speech; for never was there a happier union than that of Flaxman and Ann Denman, a woman equally amiable for her Virtue and her accomplishments. That the president's utmost prediction was not at all likely to be fulfilled became soon apparent by proofs of increased ability, which the artist gave in his monument of Collins the poet, and that of Mrs. Morely, in Gloucester cathedral; which latter is a work relapses with truly the most original and genuine in our artist's productions of that class. At length he determined upon visiting Italy, for which country he set out in 1787, accompanied by his wife. While he was at Rome he had an opportunity of giving proof of the world with what intellectual power and native genius as Englishman could realise to the outward sense the conceptions of Homer, an Aeschylos, and a Dante. It was for Mrs. Han Naylor that he made a series of thirty-nine subjects from the Iliad, and thirty-four from the Odyssey, illustrative of the latter of which was the commencement of his productions in Italy, so distinct with the intellectual power of art, is it is received no more than the paltry sum of about fifteen shilling an a-piece, a sum most incredibly small, amounting altogether to not more than a fashionable portrait-painter would make at a single sitting. He paid it in respect, so for those productions at once stumped his reputation. Neither were they unproductive of more immediate good consequences, since they served to collect patrons around him; among the rest the Countess Spencer, for whom he did his portrait in the year 1788. He also obtained the patronage, if such it can be called, of more eccentric than amiable character, the earl of Bristol, a bishop of Derry, who had commissioned him to execute a group of Athamas, and paid him no more than 666l. This was, as it were, an act of capitulation, an exca- quite to the executed work, that the sculptor must have been a positive loser by it, actually out of pocket, be- relictivating what it would have produced had he retained it and offered it to some other purchaser. Flaxman, however, was confident in the work, and accordingly took for that he was too honourable, and to complain he was too proud.

During his stay at Rome he executed for the accomplished Thomas Hope an exquisite small marbel group of Cephaus and Aurora. It was for him to that he produced this wealth of his love, the reproductions of Dant, amounting altogether to one hundred and nine subjects, viz. thirty-eight from the Inferno, as many from the Purgatorio, and thirty-three from the Paradis. Here, being left almost entirely to the resources of his own imagination, without assistance from the previous ideas of other artists, he manifested still greater originality of mind and intellectual vigour than in the Homeric series, or that from Aeschylos. All the three constitute an almost new province of art, combining the distinguishing qualities of excellence and simplicity, and having very few rivals.

On his return from Italy, where he had spent upwards of seven years, not quite unprofitably as regarded his pecuniary affairs, certainly most profitably as regarded both his studies and his reputation, he took a house in Bloomsbury Square, Fitzroy Square, and in a very, he was distinguished by his noble monument to Lord Mansfield. It is hardly necessary to add that he now found the doors of the Royal Academy graciously open to receive him, he being unanimously elected an Associate in 1783. In that year Sir W. Jones, now in the church of University College, Oxford, and three bas-relief sketches of subjects from the New Testament, viz. Christ raising from the dead the daughter of Jairus, and two illustrative of the texts, "Comfort and healing," and "He that believeth in me," considered as the commencement of a cycle of sculptural composition intended to show that the simple truths of the Gospel were fully capable of inspiring the sculptor and supplying him with appropriate subjects. Of this class was the very striking monument of Sir F. B. Collins in Michelin church, Hants, which excessively figure the idea of the following sentences: 'Thy will be done.'—"Thy kingdom come."—"Deliver us from evil." To these may be added his beautiful illustration of this text, "Blissful and blest," in the monument to Mrs. Towne in Leysland, Kent, representing a mother sorrowing for her daughter, and comforted by an angel. His groups of 'Carmen,' 'Blessed,' 'Lead us not into temptation,' 'Charity,' the monuments of Countess Spencer and Miss Naylor, are also replete with religious sentiment and fervour. That he should have been
pre-judgment happy in such subjects needs not greatly excite our surprise, because he was at home in them; in their commonality and soundness of heart tenderly alive to every sentiment of devotion. Hence it was that he so successfully broke through the conventional trammels of his profession, and opened an almost entirely fresh track for himself. On the contrary, when he wrote the exterior of the great work, generally in a retired place, he did not rise at all higher than many others have done. Even his monument of Nelson, as well as others by him in St. Paul’s, are equally cold in conception and execution, without any indication of their having been wrought by him own hand. Whether he would have been better off than he was, had he lived, it is much better in the colossal figure of Britannia, which he proposed should he erected upon Greenwich Hill, admits of doubt; although that he could have executed such a work can hardly be questioned. A figure, however, of such stature and importance, so vast a length as 200 foot, was treated as an absurdly extravagant, if not impracticable and utterly visionary scheme, though in these days of gigantic enterprise, even if rejected as useless, it would not have started as overpassing the bounds of possibility.

In 1810 he was appointed to the then new professorship of sculpture at the Royal Academy, to which circumstance the world is indebted for his series of Lectures on the art, which, although of no extraordinary merit as literary composition, in his own day and in his own time, were studied with profit, not by those alone of his own profession, but by artists and men of taste generally.

Till the year 1820 he had enjoyed the best species of prosperity which Heaven can bestow, and which those who are not bred by a life of serenity and tranquil competence, with constant occupation in the art he loved, and increasing fame attending it; but he was now doomed to experience a most bitter bereavement in the loss of her who had been his affectionate companion for 30 years. He henceforth felt a blank in his existence which neither the solace of friendship nor the honours of public applause could fill up. Nevertheless, so far from yielding either to despondency or to the pressure of advancing age, he still continued to apply himself vigorously to his art, although his days were numbered, and his death was impending, and he himself was aware of it. The friends among his very best. The shield of Achilles, first modelled in 1818, afterwards cast in silver-gilt for George IV., is certainly one of the most splendid achievements of the art at modern times. To this period belong also his Psyche, and group of the Archangel Michael and Satan, both of them stamped with his genius. So far from having lost any of its energy, his mind and hand continued active till very last; for when prevented by indisposition from working more, he sketched and designed on paper. The interference of business experiences him impatient, but few as it were, during the last five years or so, before his death he continued able to employ himself in his usual pursuits and studies without particular inconvenience. That event took place on the 7th December, 1826; and on the 15th of March following he was interred to the grave (in the churchyard of St. Giles, in the Fields) by the president and council of the Royal Academy.

Whether we contemplate him as a man or as an artist, as much as he commands our love and our admiration, the want of words to do justice to his excellences, a deficiency to avoid the excesses of overrated panegyric. In him the man excelled and seconded the artist, for in all his best productions, those which are really to be regarded as the spontaneous offspring of his own mind and feelings, the workings of a good, a pure, and honevoulent spirit are as discernible as those of a great and lofty one. It must indeed be confessed that in some of the mechanical parts of his art he did not greatly excel, neither do his works display that high finishing and delicate execution which enliven the eye and often mislead the judgment. The style which he had possessed and used in modelling and execution equal to his talent in invention and composition, he would certainly have had a great share in the progress of the whole art, which has taken place in the art. Nevertheless it is greatly indebted to him, since, as far as we are aware, his productions, we may say, are not only the main contribution to awaken sculpture from a certain lethargy, and to restore the golden style—the glory of the antique—which he knew how to apply to his subjects. This praise, if not very warm, is sufficiently discriminating and just upon the whole. It is admitted that Fizeau helped to restore the art from the imbecility of a very high degree, occupied at the time of the convulsion into which it had fallen, and in which it appeared inclined to remain. He rendered it more poetic, taught it to address itself to the heart, to touch the noblest feelings of our nature, and, while it touched, to elevate them to that sphere of holiness wherein alone our own affections constantly abided.

FLEACHÉ, LA. [BEARTH.]

FLEACHÉ, a breast-work consisting of two faces, which form with one another a salient angle. It is constructed of a face of the greatest strength, generally in a retired part, at the foot of the place. [Fig. 1, Bastion], in order to defend by its fire the ground before the hastion and ravelin.

FLECHIER, ESPIRIT, born in 1629, at Pernes, near Carpentras, studied in the college of the 'Fathers of the Christian Doctrine,' of which congregation his maternal uncle was then the superior. Being ordained, he went to Paris, and became preceptor to a young gentleman. He made himself favourably known by writing panegyrical orations in honour of saints and also of disdained distinguished contemporaries, which were much liked at the time as specimens of eloquence. In 1673 the Abbé Fliche was named a member of the French Academy; and in 1682 he was appointed by Louis XIV. almoner to the Dauphiness. On the death of the head of the family in 1685, he gave himself up to Catholicism the Protestants of Poitou and Brittany. On his return to Paris he was appointed by the king bishop of Lavur, but was soon transferred to the see of Nismes. The revocation of the edict of Nantes, 22nd October, 1685, was much blamed by his friends, who attributed to him to the Protestant, or Huguenots as they were called, who were so numerous at Nismes and in the neighbouring districts. Fliche, who was naturally of a mild disposition, while obeying the intolerant orders of the king towards this part of the population, exclaimed with an exalted inanity as could be expected from one in his situation. His letter contains painful evidence of the oppressions and cruelties committed at that epoch. When the persecuted Protestants rose in 1702-3 against their oppressors, they fearfully avenged their wrongs by levelling their churches. This was followed by Louis XIV. sending a large army under a marshal of France, and the devastation of the mountainous districts of the Cévennes ensued. Fliche repeatedly expresses his astonishment at the boldness and courage of the victims. (Letters 138, 155, 160.) The name of Les Œuvres de Fliche) Fliche died at Nismes, in February, 1710. His scattered works have been collected and published:—Œuvres complètes de Fliche, 10 vols., Nismes, 1762. They consist of biographies, sermons, panegyrics, and 'œuvres funèbres,' or funeral orations, in which he was considered to hold the rival place of the famous Cardinal Maury (Essai sur l'Éloquence de la Chaire, vol. i.) examined with a critical eye Fliche's orations in honour of Marshal Turenne, which was considered as his masterpiece. Fliche also points out the defects of Cardinal Ximenez, rather too partial according to some critics, and a life of Theodosius the Great. His correspondence above mentioned furnishes some interesting materials for contemporary history.

FLECKNOE, RICHARD, said to have been a Catholic priest. He was a minor poet and wit in the time of Dryden, and would have been long since forgotten had not that writer used his name as the title of a severe satire against Shadwell, and therein proclaims that he was 'a rogue of wordy name and a dunce.' Through all the realms of nonsense absolute.' Of course his name was transmitted to posterity with the same ignominy that has accompanied the heroes of Pope's 'Dunciad.' The reader of satires should not however take too much for granted, nor he too ready to admire them, that all objects of ridicule and invective are such fools and knaves as they are represented. Party feeling and private animosity may have occasioned the attacks directed by a powerful opponent, rather than a cool judgment and a reasonable inquiry into the actions of those persons, who, like Pope and Dryden, the satirists themselves are in the hands of every gentleman possessing a moderate library, while the works of the persons satirised are utterly unknown, excepting to those who take an active interest in studying the literature of the period. Hence a vast number of persons are
by name familiar to the mass of readers, on account of their having been by our great satirists denounced as the writers of unredeemed trash, without any opportunity being given of examining the justice of the worst. The Old Bailey, in particular, is a visitation to these partial views. There is no doubt that the mere readers of Dryden take it for granted that Flecknoe was a most unqualified idiot; yet in the "Retrospective Review" (vol. 5) there is an article which proves more conclusively than he has been possessed of any common genius, and was sadly defective in his versification; he still possessed much fancy, and wrote some small pieces which for happy turns of thought would not disgrace even the first writers in the language. His description of a murderer, treated with a resolution quite in its way.

**FLEET PRISON,** like the neighbouring street, takes its name from the brook or river of Fleet, which formerly ran by it, and still runs under Farringdon Street. The earliest mention of this prison is in a writ of Richard II., who, in a letter to his obedient, brother of William Longchamp, chancellor of England, and to his heirs for ever, the custody of his palace at Westminster, with the keeping of his gall of the Fleet in London. King John, also, by patent dated in the third year of his reign, gave the house of Wols the custody of his palace at Westminster and his gall of the Fleet, together with the wardship of the daughter and heir of Robert Lenthal.

(Stow, *Sane,* edit. 1605, p. 393.)

**The History of the Prisons in England and Wales** (4to, Warrington, 1781, p. 217), says, to this prison were committed formerly those who had incurred the displeasure of the Star Chamber; and adds, that in the 16th Char. I., when that court was abolished, it became a prison for debtors of ancient persons charged with debts. It was the old Courts of Chancery, Exchequer, and Common Pleas. But the prison of the Fleet was, in all probability, a place for debtors from its earliest existence; numerous instances to prove it may be found through different centuries upon the rolls of parliament. Adam de Wythford, chamberlain of North Wales, was imprisoned there for debt in 1335 (Rot. Parl. vol. ii. p. 91); and we find a petition from one John Frauncy, a debtor confined there, a.d. 1290, 16th Edw. I. (ibid. vol. i. p. 37).

II. IV. a.d. 1400, it was determined by parliament that the council, with the chancellor and justices, should settle what fees the warden of the Fleet was to take (ibid., vol. v. p. 110); and it was determined in the parliament of the 23rd Hen. VI. that his office was not to be prejudiced by the statute of that year touching shrieves and gaols.

Howard (*State, Sc. et supra,* p. 219) has given a table of the regulations observed in the Fleet, with another of the warden's fees, as both were finally settled in Hilary Term, 1617 (15th Hen. VI.). (See also below of State's *Prisons,* 40. Lond, 1612, p. 218—222.)

The warden is appointed by letters patent under the great seal. He receives no salary whatever, but is wholly remunerated by the fees above-mentioned. The liberty of persons confined within the Rules, upon giving an indemnity against an escape, has been granted by the warden for the time being from very antient times, and the practice is expressly recognised by the statute of the 5th and 9th Will. III. c. 25. (*Return to the House of Commons for the State of the Prisons.*)

Strype, in his edition of Stow, fol. Lond., 1720, b. iii. p. 299, gives the extent of what are technically termed the Rules of the Fleet. He says, 'To this prison there have been, some years since, granted Rules; which are, all the north side of Ludgate-hill, the west side of the Old Bailey unto Fleet-lane, and down the same on the south side; and so the east side of the row of houses next the Fleet, taking in all the courts and alleys within the said limits.'

The prison was burnt in the Fire of London, and again by the riots, 1717.

**FLEETWOOD, CHARLES,** notorious for the active part that he took in the Rebellion, was descended from a private family in Lancashire, from which several distinguished persons had sprung. From a trooper in the earl of Essex's regiment, he was afterwards to be a great man made governor of Bristol. In October, 1645, he was returned to parliament for Buckinghamshire, and in 1647 was one of the commissioners named to treat with the king. At the battle of Worcester Fleetwood distinguished himself so much that he gained great favour both with Oliver Cromwell and the army in general; indeed afterwards, when the king was executed, and the parliament had settled the Constitution of the new government, he was more prominent in the Jacobite party than in the Whig. He was not in the influence that he possessed among the Jacobites. Fleetwood had married Frances, the daughter of Thomas Smith of Wiston in Norfolk, by whom he had three children, but this lady being dead, he was fixed upon by Cromwell, who made him a Jacobite political motion by his court, and his daughter, the widow of Ireton. Soon after he became his son-in-law the Protector nominated him commander-in-chief of the forces in Ireland, where he was also invested with a commissionship for the civil department. Cromwell, however, as he stood at the time was not perfectly secure in the hands of Fleetwood, who was a thorough Republican, and strenuously opposed to the Protector being made king, sent his son Henry Cromwell to watch over his conduct. Some enmity was thus produced, and with it the death of Richard II., one of the new lords, and made the chief of the fourteen major-generals to whom the government of the nation was arbitrarily committed, and who were deputed to search for such rascals as had borne arms under Charles I., or were defecctory to the present government, with power to imprison them, and to decimate their estates. When Richard Cromwell became Protector, Fleetwood strove to obtain a title, and to supplant him in his authority; but while he was cavilling against him, the nation, wearied with tumult and disturbance, had elected the ex-King his government.
obscure passages of both those writers are illustrated by Fletch. It seems to have been the author's design to give a complete history of the English Monarchies by the English principles to which he ad- duced his life. Under the earl of Salisbury he laid the foundation of an excellent literary education. When he grew up he spent some time in travelling on the continent. On his return home he obtained a seat in the Scottish parliament as commissioner, or member, for his native county; but his influence was considered by the Hadley faction as an enemy of the government. After some time however he deemed it prudent to withdraw to Holland; on which he was summoned before the lords of the council, and, when he did not make his appearance, was put into prison and his estate confiscated. He ventured to come home in 1683, but soon returned to the continent, and there he remained till 1685, when he thought proper to engage in the attempt of the duke of Monmouth. But he had scarcely landed in England when he shot a man in a street; and, being tried for murder, was acquitted of the crime. He then proceeded to Spain, and afterwards to Hungary, where he took part in some military operations against the Turks, and distinguished himself by his conduct; in the year 1681 he became a member of the Scottish parliament and afterwards in parliament. After a short time however he became nearly as determined an opponent of the government of King William as he had before of King Charles II. His last exertions as a public man were directed against the union of the two kingdoms. He died in London in 1716. He is the author of the following tracts, all of which, we believe, were originally published without his name:—
1. A Discourse concerning the Affairs of Scotland, written in the year 1699; Edinburgh, 1698; 2. 'Two Discourses concerning the Affairs of Scotland, written in the year 1699,' Edinburgh, 1698; 3. 'Discourse delle Cose di Spagna, scritto nel mese di Luglio, 1698,' Napoli, 1698; 4. 'Speeches by a Member of the Parliament of Hungary the 23 of March, 1703, Edinburgh, 1703; 5. 'An Answer to a Conversation concerning a right Regulation of Governments for the Common Good of Mankind;' in a Letter to the Marquis of Montrose, the Earls of Rothes, Roxburg, and Holland, from London, the 7th of December, 1703, Edinburgh, 1704. The original editions of these Discourses are scarce, but they were all reprinted at London in an octavo volume in 1737, under the title of 'The Political Works of Andrew Fletcher, Esquire.'

Fletcher wrote in a scholarly and scholarlike style, occasionally rising to considerable warmth and energy; his compositions are interspersed with many sagacious and happily expressed remarks, and they have at all times the charm of earnestness and perfect conviction. But for deep or extensive views in the philosophy of politics only will be searched in vain. The author's prescriptive name of patriot best describes what he was. He was thoroughly honest, in the sense of being inaccessible to any seduction which appealed openly to his individual interests, and was ready to consider himself as engaged in the public service and danger in the cause of what he deemed the public welfare and in the performance of his duty. But his politics, to say the truth, were made up rather more of passion than of philosophy. His two cardinal principles were an enthusiasm in behalf of the independence of Scotland, and an extreme sensitiveness to the mischiefs or dangers of arbitrary power, which was however in great part an impulse of his physical organization, and which also, we are compelled to add, had not a little of the narrowness and one-sidedness as well as the fire and dash of a fanatic, allowing him to employ the same eloquence in which he, in one place, denounces the oppression of kings, to urge in another the strange scheme of providing for the poor by the restoration of some such system of slavery as he had in his eye. This singular proposal is contained in his Two Discourses on the affairs of Scotland. Among the most curious of his works is his account of the Conversation of Governments, which appears to be a report of a real conversation, the parties being Fletcher himself, the earl of Granmary, Sir Edward

*FLETCHER, ANDREW, was the son of Sir Robert Fletcher, of Shott, in East Lothian; he was born in 1612, and died when his son was a child. He is, we suppose, the subject of a small dode- cimo volume printed at Edinburgh in 1665, and entitled 'A Discourse on the Memory of that rare and truly virtuous Person, Sir Robert Fletcher, of Shott.' It was written in the 39th year of his age; written by a Gentleman of his acquaintance.' It is a warm tribute to the general worth and especially to the piety of his character. Andrew Fletcher's early education was superintended by Gilbert Burnet, afterwards the celebrated bishop of Salisbury, who was at this time parish minister of Sal- tot. To him Fletcher was probably indebted for his first steps in the study of political principles to which he ad- duced his life. Under the earl of Salisbury he laid the foundation of an excellent literary education. When he grew up he spent some time in travelling on the continent. On his return home he obtained a seat in the Scottish parliament as commissioner, or member, for his native county; but his influence was considered by the Hadley faction as an enemy of the government. After some time however he deemed it prudent to withdraw to Holland; on which he was summoned before the lords of the council, and, when he did not make his appearance, was put into prison and his estate confiscated. He ventured to come home in 1683, but soon returned to the continent, and there he remained till 1685, when he thought proper to engage in the attempt of the duke of Monmouth. But he had scarcely landed in England when he shot a man in a street; and, being tried for murder, was acquitted of the crime. He then proceeded to Spain, and afterwards to Hungary, where he took part in some military operations against the Turks, and distinguished himself by his conduct; in the year 1681 he became a member of the Scottish parliament and afterwards in parliament. After a short time however he became nearly as determined an opponent of the government of King William as he had before of King Charles II. His last exertions as a public man were directed against the union of the two kingdoms. He died in London in 1716. He is the author of the following tracts, all of which, we believe, were originally published without his name:—
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Seymour, and Sir Charles Musgrave. The part of the dialogue given in Seymour in particular is highly character-
ized. It is in the production that we find the remark
He is more than a political character, having
at the same time, a strong jealousy of the power of
powers, the writer says, 'This made him oppose King
Charles, invade King James, and oppose the giving up
much power to King William, whom he never would serve;
lor does he ever come into the admission of anyone
quitting his power until the constitution of the
parliament of Scotland.' It is added, 'His thoughts are
large as to religion, and could not be brought within
the bounds of any particular sect.' In the Memoirs of
Leckhart (2nd edit. svo. Lon. 1714), Fletchcr is described
as 'extremely wedded to his own opinions, that there
were few who could endure to reason against him.' He
everfore could not be brought to act with any party.
He was, no doubt,' continues Leckhart, 'an enemy to all
monarchical governments, at least in imagination.' They wanted
I do very well believe his aversion to the English and the Union was so great, in revenge to
them he would have sided with the royal family.' Not
withstanding his democratic opinions, 'he liked,' it is added,
'comforted, and conversed with, highlighting the
feudal, the oriental, the hereditary, the patrimonial,
to make them the best committees, and of most honour, integrity, and
insecurity precariousness.' The truth is, his liberalism,
or republicanism, was of a strongly aristocratic complexion.
He was by temper, as well as by birth, a prince, a
member of the feudal than of the old Roman stamp. However, the general bearing of his
writings, as well as of his public life, may be considered as
placing him among the British democrats; and his talents,
and the value of what he has left, make him
considerable among his contemporaries.
The best qualities of his writings are their cordiality and straightforwardness; he has the advantages, and also the disadvantages,
of the man who has never changed his opinions, and
who has not doubted—extreme confidence and a firm
belief, but little largeness of view, and a tendency to
inconsistency, which even the most liberal principles cannot
redeem from the charge of illiberalism and bigotry. There
is a very considerable account of Fletcher by the late earl
of Abingdon; a defence of him on the
Letters and Writings of Fletcher at Sallott, and the Poet Thom-
on, svo. 1792. A nephew of Fletcher's, of the same
name, was an eminent judge of the Court of Session
from 1726 to 1775, by the title of Lord Milton. He was
a bishop of Sallott, and, indeed, a curious
...
stantly reprinted; 'Les Moeurs des Israelites,' of which an English translation was made by Dr. Adam Clarke. Bishop Horsley, in his 'Introd. to the Reading of the Old Testament, which should lie in the hands of every young person; 'Les Moeurs des Christiens,' also translated into English. These two last works are considered, for elegance and precision of style, as among the best in the annals of Christian literature. The title of the work is 'Traité de la méthode des études.' But the most valuable of Fleuré's works, and that which has established his reputation as a first-rate writer, is the 'Histoire Ecclesiastique.' It comprises a space of fourteen centuries, beginning with the establishment of Christianity, and terminating at the opening of the council of Constance. It was objected to the author that he related too many miracles, but he excused himself on the ground that such was the belief of the church to which he belonged. Though an orthodox Roman Catholic priest, he strictly adheres to the truth in his account of the scanda which have thrown odium on the church, and the best proof of his sincerity is that his 'Ecclesiastical History' was put into the Roman Index Expurgatorius. Fleuré was engaged on the 20th volume of his History at the time of his death. It was completed till the year 1698 by Fohre, of the Oratoire, in 16 vols. in 4to. Fleuré's 'Ecclesiastical History' is translated into English. The university library of Cambridge contains a manuscript of a 'History of France,' which Fleuré drew up for the use of the French princes while he was engaged with their education, but it has never been printed. We must not omit to mention, that, notwithstanding his grave occupations, Fleuré had leisure to compose a treatise on the duties of masters and servants. This little work, which has been much esteemed, is translated into English.

FLEXURE. CONTRARY. A point of contrary flexure in a curve is that at which the branch of the curve ceases to present convexity to a straight line without it, and begins to present concavity, or vice versâ. [Cours.] But when a straight line passes through a point of contrary flexure, the curve presents either convexity on both sides or concavity on both sides.

The algebraical test of a point of contrary flexure is a change of sign in the second differential coefficient of either of the two, abscissa or ordinate, with respect to the other. It is frequently stated, in works on the differential calculus, that the sole test of such a point is \( \frac{dy}{dx^2} = 0 \), where \( x \) and \( y \) are the abscissa and ordinate. This is not correct; the above equation may be true when there is no contrary flexure, and there may be contrary flexures when the above is not true. It is necessary and sufficient for a point of contrary flexure that \( \frac{dy}{dx^2} \) should change its sign, which cannot be except when it is nothing or infinite. Examine therefore all the roots of the two equations,

\[
\frac{dy}{dx} = 0 \quad \text{and} \quad \frac{1}{dx^2} = 0
\]

and such of them as are accompanied by change of sign give points of contrary flexure.

For instance, let the equation of the curve be

\[
y = 3x^2 - 20x^2 + 50x^2 - 60x^2
\]

Then \( \frac{dy}{dx} = 0 \) when \( x = 1 \) and when \( x = 2 \). But there is only a point of contrary flexure when \( x = 2 \), for when \( x = 1 \) there is no change of sign.

FINDERS, MATTHEW, was a native of Dorrington, in Lincolnshire. He went early to sea in the merchant service. In 1795 he was a midshipman in the Royal Navy, and went to New Holland with the ship that conveyed Captain Flinders, the discoverer of Van Diemen's Land, out of which he had been a foundling mind in George Bass, the surseon, who, like himself, was bold and adventurous, and had a passionate desire to explore new countries. Soon after their arrival at Port Jackson those enterprising young men launched a little boat, which was appropriately called

'Tom Thumb,' being only 6 feet long. In this boat Flinders and Bass, with no other companion than a hoy, ran several thousand miles beyond the point where Governor Hunter's survey had stopped; They made several discoveries and encountered many dangers. Their heroism was appreciated but by few persons in the colony. The English had been ten years in Australia when Bass made a voyage of more than 250 leagues (beginning in the vicinity of the coast) down the coast as 'unknown coast.' Flinders was anxious to remove this blot. The complete examination of Australia became what he called his 'darling object.' It was in the vast Diemen's Land, across the Bass's island; the existence of a strait dividing it from Australia was first mentioned as a probable fact by Bass, who ran down the coast in a whale-boat, and who suggested that the heavy swell which rolled in from the westward could be produced only from the great Southern Ocean. Flinders went back with his old companion Bass to ascertain this fact. They embarked in the 'Norfolk,' a large decked boat built of the excellent fir of Norfolk Island; and they had only six men to assist them. They went through the straits, made a rapid survey, and returned to Port Jackson in little more than three months. The name of Bass was given to this strait. In the following year, 1799, Flinders, now a lieutenant in the Royal Navy, was sent in the same small vessel to explore the coast to the north of Port Jackson, and was instructed to make nothing done since being sent by Cook. He visited and examined all the creeks and bars as far north as 25°, paying particular attention to Harvey's Bay, and returned to Port Jackson with satisfactory accounts. On his return to England he was promoted.

In July, 1800, he was sent on an expedition to the coast of New Guinea, in a brig, the Investigator, a bark of 334 tons, carrying 68 men, including an astronomer, a naturalist, two painters, a botanic gardener, and a miner. England and France were at war at the time, the preliminaries of the treaty of Amiens not having been signed until the 2nd of October. In the meantime Flinders had been launched in a French pass, conceived in flattering terms, and speaking of the sacred rights of science, was granted to Flinders, who, whether in war or peace, was to be respected by all armed ships of France, and to be entertained as a friend by any French captain. When he arrived in the south parallel, though not expressly laid down, had been acted upon by the French in the time of Louis XVI.; and about a year before Captain Flinders's departure the English government had regularly established a precedent. M. de Frécaut, in the name of his sovereign, challenged all pass in favour of Captain Baudin, who, it was said, was going with two ships on a voyage of discovery 'round the world,' and the Addington administration readily and courteously granted it, notwithstanding the fierce hostilities which were then existing between the two countries.

In the month of December Captain Flinders made Cape Leuwen, on the south-east coast of Australia; and commencing operations, he gradually surveyed and examined the coast to the eastern extremity of Bass's Straits, where, in Encounter Bay he met the Flinders River which, instead of going round the world, had made straight for Australia, and devoted their whole care to the examination of Van Diemen's Land and New South Wales, evidently with a view to the formation of a French colony. Captain Baudin had had the same design for some time; but he had been delayed in collecting shells and catching butterflies, and at the moment of their meeting he had done little in the way of discovery or survey; and Flinders says that by assiduity and favourable circumstances he had anticipated him in the matter of the eastern coast. He says that he gave Baudin an account of his discoveries. Baudin afterwards said that he found Captain Flinders not very communicative, but that he obtained intelligence of all that had been done on the south-east coast from some of his officers. From 1800 to 1802 Flinders sailed to Port Jackson, where he arrived on the 9th of May, 1802. Having refitted, he set off again on the 22nd of July. He then steered northerly along the east coast, exploring Northumberland and Cumberland Islands, then turning down the eastern end of the coast and exploring the great chain of coral rocks—a long and dangerous tract, most necessary to lay down. In fourteen

* It appears that Bass met with no reward whatever. In 1803 he left Port Jackson without a grant of money, and was allowed only half of what Flinders had received in 1801. In 1809 there was a vague report that he was alive and settled somewhere in Peru; but the more probable story is that he was lost at sea.
days he conducted the Investigator through these perilous
areas, where he had nothing to guide him but his own
vigilance and skill; and bearing stern north, he made
Torr Strait, and surveyed the vast gulfs of Carpentaria,
which had been visited before; then too ill-served by techne, 
Carpenter, its first discoverer. While engaged in this 
duty the Investigator was reported to be ‘quite rotten,’ and
in such a state that she could not possibly last above six
months in fine weather. Three of these months Flinders
kept her in the gulf; he then stood away for the island of
Timor, where he refreshed his sick and over-fatigued crew.
From Timor he made his way with the leaky bark to
Cape Leuven. Sailing again along the southern coast, he
anchored in the Archipelago of the Recroche; then pass-
ing to the south, he anchored for Port Jackson, where
he arrived on the 9th of June, 1803, having lost many of
his best men, and among others Good, the botanical
gardener. The Investigator was immediately condemned:
she was in such a state that people could scarcely conceiv-
e the lamps were extinguished.

Unable to continue the survey (there being no disposable
vessel in the colony), Captain Flinders embarked as pas-
senger in the Porpoise, a store-ship, in order, he says, ‘to
lay his charts and journals before the Lords Commissioners of
the Admiralty, and if such should be their pleasure,
another ship to complete the examination of the Terra
Australia.’ The Porpoise was accompanied by two trading
vessels, the Bridgewater, Captain Palmer, and the Cato, of
London. The route chosen was by Torres Strait. On the
19th of August, he writes, ‘when the sun was high in the
heavens, and the waves were breaking among breakers, and
the very next instant striking upon a coral reef, she took a fearful heel over her lar-
board beam-ends.’ A minute or two after, the Cato struck
on the same reef, about two cable lengths off, and went on
flattening of the rock, which was perfectly safe in smooth water;
but Palmer, basely ‘bore round all,’ and then pursued his course
without doing so much as sending a boat to ascertain the
fate of the two vessels. As morning dawned Flinders,
acted with admirable self-possession, contrived to get the
men safely landed on a sand-bank, which at all stages of
the tide remained a little above water-mark. They removed
some portion of the stores from the wreck, and made them-
selves secure as men could in such a situation. There is scarcely a more interesting case of shipwreck upon record; and the methods adopted, and the admirable order
preserved, show that there was a master-mind among them.
On the 26th of August Flinders left the reef in a small open
boat, and went up the coast past several hundred miles, to
Port Jackson on the 6th September, and procured a
small schooner, the Cumberland, which was only twenty-nine
tons, and she got to sea it was found that she was very
leaky. She was accompanied as far as the wrecks by a
schooner, and later by a trading vessel which was bound
for China. Flinders reached the reef on the 7th October,
and was received with three cheers. In the mean while the
poor sailors on Wreck Reef Bank had planted oats, maize,
and pumpkins, and the young plants were up and flourishing.
The ships were refitted so that he had no coconuts or
manna with him to plant on the bank. Some of the men went
back to Port Jackson in the schooner, some embarked in the
trading ship bound for China, the rest cheerfully re-
mained with Flinders, to make, in the ill-conditioned Cumber-
land, a voyage of 1700 miles, in 46 days, to the Gulf of
Gravesend, the circumnavigation of half the globe; for
Flinders intended to reach England with this miserable
craft. He mentions that no man refused to share the
risk with him except his clerk. Having gone through
Torr Strait, and touched again at Timor, Flinders
stretched boldly across the Indian Ocean, and made the
Isle of France, which was not yet taken by the English.
Although the war had been renewed, he relied on his French
friends, and in fact he could scarcely choose, for the little
Cumberland was in such a state as to sink at any moment, and the French port.
To his satisfaction the authorities of the Isle of France seized the vessel and all his papers, and
declared him and his people to be prisoners of war. The
governor even chose to consider Flinders as a spy, and
treated him with a brutal severity which, from his
unconscious of mind, certainly had the effect of shortening
his valuable life. Flinders knew that Baudin was returning
to France, and he saw with a prophetic eye that the French
man would claim the merit of all his discoveries on the
southern coast of Australia. He thought the governor De
Bougainville, a little Indies officer, a little French
martyr, otherwise, he says that he should have been
induced to suspect that he was detained a prisoner in order that
Baudin might have the start of him in publishing, and
make the world believe that it was to the French name alone they were indebted for the complete discovery and
examination of those parts. Some English writers did
not hesitate to take this view of the case, and what followed in
France settled the question. A volume and an atlas were
published: the whole of the southern coast, including
the whole of Australia, and Bass, but also the
islands of Nuyts, Vancouver, Grant, and Doutre- Reaux, was
made new, and called Terra Napoleon. Every port which had been named by Flinders and his precursors was
rechristened, and there were all sorts of significant names
given, from Cape Marenge and Cape Rivoli, to Talleyrand
Bay. Baudin had made about 30 leagues of real discovery;
he claimed or seemed to claim nearly 900 leagues.
After piling six years a prisoner in the Isle of France,
Flinders was liberated, and he reached England at the end
of the year 1804. His charts and plans were reprinted for
him, but one of his log-books was kept or destroyed. His
health was completely broken, but as long as there was
work to do he kept up his energy, correcting his maps, and
writing out his descriptions. After revising his last
sheet of the Log-book, he saw with a feeble hand and
found on the very day his book was published. (A Voyage to
Terra Australis, &c., in the years 1801, 1802, and 1803, in
H.M. Ship Investigator, and subsequently in the armed
vessel Porpoise and Cumberland schooner, 2 voes, with
Atlas, etc., 1814.)

FLINT, a well-known silicious mineral, the true native
place of which is the upper bed of the chalk formation,
where it occurs in regular beds, consisting either of nodules
or flat tabular masses, which may be bounded one by
another in miles in length in the chalk of England and
often found in the form of sponges, alysonia, echinids, &c.,
it occurs also plentifully in alluvial deposits in the
neighbourhood of chalk. Gravel consists principally of flints
which have been liberally subjected to attrition, and by exposure
air and moisture, have acquired a yellowish-red colour,
owing to peroxidization of the iron which they contain;
in this state they are termed ferruginous flints.

Flint is usually of a grey colour of various shades; some-
times a little black, and in other places a little red, and
it is rather harder than quartz, which it scratches; these
fragments of the black varieties are translucent;
the fracture is perfect, and large conchoidal; it is fragile,
and being largely laminated, it is broken with equal facility
in all directions. The thin, or transparent, fragments are sharp.
Specific gravity 2.594. It is insubstantial, but becomes opaque and
white by the action of heat.

According to Klaproth, flint consists of-

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>98</td>
</tr>
<tr>
<td>Lime</td>
<td>5</td>
</tr>
<tr>
<td>Alumina</td>
<td>25</td>
</tr>
<tr>
<td>Oxide of iron</td>
<td>25</td>
</tr>
<tr>
<td>Water</td>
<td>1</td>
</tr>
</tbody>
</table>

*It is worth while remarking, that the crews of the Porpoise and Cato got
safety home, after all their dangers; and that Palmer and the whole crew of
the Bridgewater perished at sea, on the homeward voyage.*

FLINT, a town in North Wales. [FLINTSHIRE]

FLINT-Glass. [GLASS.]

FLINT-LIQUOR. [LIQUOR.] is a solution of flint or silica
in the alkali salts; this hydrate is prepared by fusing together
a mixture of four parts of hydrate of potash and one part of
powdered flint or fine sand. When a part of the fluid
compound is poured out of the crucible, crystals are formed
also, as the name indicates, but not for this purpose fine
silicious sand is now generally substituted.

FLINT, a town in North Wales. [FLINTSHIRE]
FLINTSHIRE, a county in North Wales, in the north-eastern part of the principality. The main portion of the county extends along the estuary of the Dee, and there are two outlying portions. 1. The main portion approximates in form to a parallelogram, having its greatest extent or length from north-west to south-east. The north-west side from the coast (which is twelve miles long) is washed by the Irish Sea; the north-east side from the Point of Ar to Dodleston Common (twenty-two miles) is for the most part washed by the estuary of the Dee, and partly marked by the county of Chester; the south-east side (ten miles) is washed by the county of Denbigh, from which it is partly separated by one of the branches of the Alen; the south-west side (twenty-three miles) is bounded by the county of Denbigh, the boundary line following along the hill which skirts on the east the valley of the Upper Alen. It is also bordered on the north-east the vale of Clwyd, and partly along the Clwyd itself to its outlet. 2. The principal outlying portion is also a parallelogram, having its greatest length from west-north-west to east-south-east. It is bounded on the north-east side (seven miles long) by the county of Chester, from which it is separated by the tributary waters of the Dee; on the east-south-east and south-west-south sides (seven miles and nine miles respectively) by the county of Salop; and on the north-west is Mold, the principal town of Denbighshire, from which it is separated by the Dee. 3. The smaller portion is situated between the main portion of the county and the larger outlying portion: it is bounded on one side by Denbighshire, and on the other by the Vale of Clwyd. In population it is the smallest county in Wales; in area it is the eighth of the Welsh counties, the inhabitants in 1831 being 56,012, or 246 to a square mile. In density of population Flintshire far exceeds any other part of Wales, and is just equal to the county of Middlesex. The present county of Flintshire is about 174 miles in a direct line north-west of St. Paul's, London.

Coast, Surface, and Hydrography.—The only promontory on the coast is the Point of Ar. The coast is low, and is cut into on the south by the Bag sands, in some places near four miles wide, and dry at low water, except where they are traversed by the low water channel of the Dee, and of the various streams that flow into that river or into the open sea. On the north-west coast are several pools, called Trewyn pools, forming a line along the shore of about two miles. There are no hills in Flintshire of great elevation: the south-west boundary lies along the hills which skirt the valleys of the Upper Alen and the Clwyd; and a range of hills begins to break off the coastal plain north-west to south-east, separating the Alen and the lower part of the Clwyd from the estuary of the Dee. Garreg Mountain, towards the north-west extremity of this range, is 835 feet high, and Gwaunysgwydr Down, still farther to the north, has a name which seems to indicate that this range is formed of hills a number of small streams flow, on one side into the Dee, and on the other into the Clwyd and Alen. These rivers, though they have part of their course on or within the border of Flintshire, rather belong to other counties. The new channel of the Dee below Chester is indeed for the most part within the county, and constitutes the only inland navigation which it possesses. There is a small rail-road from the coal-pits near Mold to the Dee.

Geology and Character.—The new red sandstone or red marl, the uppermost of the rocks of this county, occupies the two outlying portions; and is found on the north-west coast, in the lower part of the vale of Clwyd, and in that part of the county which is on the north-east side of the new channel of the Dee. The coal-measures occupy the estuary of the Dee, and the coal-field forms a belt extending from the Point of Ar to the south-east side of the county, gradually increasing in width inland. The seams of coal are of different thickness, from three quarters of a yard to two and a half yards; but the general average, in four to two in three. Common, cannel, and peat-coal are found. Pits are worked in the neighbourhood of Holywell, and at Mostyn, which is on the estuary of the Dee, not far from that town; in the neighbourhood of Holywell, and between that town and Flint; and also in the neighbourhood of Mold, and between Mold and Hawarden. Beds of slate and sandstone, ansering in position and character to the shale and millstone grit of Denbighshire [Dinbychshire], underlie the coal-measures, and crop out from beneath them on the south-west side of the coal-field, forming a belt more inland than the coal-field, but parallel to it and to the shore of the Dee, and separating the coal-field from the district occupied by the carboniferous or mountain limestone. This limestone is a very hard and resistant rock, and except a small tract occupied by the old red sandstone: extensive lead mines are worked in the limestone, especially in the neighbourhood of Holywell, and near the road from the town to Hawarden. Copper, iron, zinc, and calsimine, are also found. 

Divisions, Towns, &c.—The present division is into five hundreds. Prestatyn, in the north, along the coast; Rhuddlan, in the west, toward Denbighshire; Mold, in the east and north, toward Cheshire and Denbighshire; Colehill, in the north-east, a principality town; and Mostyn, in the south-west, comprehending the larger detached portion of the county and one or two parishes in the south-east of the main part. The smaller outlying portion is in the hundred of Mold. Flintshire contains one city and contributory borough, St. Asaph on the Clwyd (population, in 1831, 3142), and one pal borough and ex-county town, Flint, on the estuary of the Dee (population 2515); six other contributory boroughs, Holywell near the estuary of the Dee (population 8899); Mold, near the Clwyd; Caergwrle or Caerwry, with Hope, on the Alen (population 2747); Overton, in the large outlying portion of the county near the Dee (population 1746); Rhuddlan or Rhuddlan on the Clwyd (population 1566); and Caerwys, or Caerwry, near Deeside (population 933). Of St. Asaph and Holywell an account is given elsewhere [Asaph, St.; Holywell]. St. Asaph, Holywell, and Mold were added as contributory boroughs to Flint by the Reform Act; Caergwrle, Overton, Rhuddlan, and Caerwys before this act.

Flint, from which the county derives its name, is in Coleshill hundred, on the estuary of the Dee, 200 miles from London, through Coventry, Birmingham, Shrewsbury, Elesmere, Wrexham, and Mold. Flint was probably a Roman town; the site was taken by Augustus as a fortress by the sea. It was surrounded by a vast ditch and two great ramparts, and having four gates, with streets regularly laid out and crossing each other at right angles: many antiquities apparently Roman have been dug up in the neighbourhood [Fenwic's Tour in Wales, 2 vols. 4to., 1784, p. 515]. The remains of an ancient line of walls are still visible near the town; and the ancient church of St. Mary is surmounted by three towers, which are thought to be of Saxon origin, but it does not appear in the Domesday Survey; in which the town, if noticed at all, is possibly comprehended in the description of Colewlt, which under its modernized form, Coleshill, is applied to a township of Holywell, being near Mostyn. The town was probably built, most probably by Edward I., a short time before the year 1280; though some writers carry back its foundation to the time of Henry II. Soon after its erection it appears to have been taken by the Welsh in their revolt, a.d. 1282. The civil war of Charles II., the castle was garrisoned for the king by Col. Sir Roger Mostyn, but taken after a gallant defence by the parliamentarians. It was shortly after fell again into the hands of the royalists; but was finally taken by the opposite party under General Mytton, and was, with other Welsh castles, dismantled in 1647, by order of the parliament.

The remains of the castle stand a little to the north-east of the town on the summit of a rock of freestone. The castle is a square building with a round tower at three of the corners and at the fourth a round tower of much larger dimensions than the other, separated by a deep moat from the rest of the building, with which it communicated by a drawbridge. This large tower constituted the keep, or donjon, of the castle, and from its height its name of great hill was almost imprecisely. It is supposed that the low-water channel of the Dee once ran close under the castle walls, and there are still in some parts the rings to which ships were moored.

The other principal town of the county is Holywell, a county gaol, a dilapidated guild-hall, a national school-house, an almshouse for twelve poor burgesses, and a dissenting place of worship. Two dissenting congregations.
tions meet in private houses. The county gaol was built in 1785. At the time of its erection it was considered a neat and commodious building; but it does not admit provision for the future. The appearance of the town of Flint is very unfavourable; the streets are so broken by dilapidated walls and the gaps caused by the removal of houses as to give the place an air of desertion and irregularity.

The town of Flint is the borough and parochial chapelry by the census of 1831 was 2216, about one-eighth agricultural. The trade of the port of Flint is rapidly increasing. The estuary of the Dee is many miles wide, but the low water channel is narrow, and it was said some years ago to be so little deep when the tide was out that it might be crossed, by those well acquainted with it, on foot. (A Second Walk through Wales, by the Rev. Richard Warner, in 1798.)

The obstructions caused by the shifting sands in the channel of the Dee above Flint have caused this place to become in a considerable degree the port of Chester, and the approach to the quay had been so much improved that large vessels could come up to it at any time of the tide. The nearbyng of lead and coal mines, and the works for smelting the lead, give employment to a great number of persons, and furnish the principal articles for export. Of the miners, a portion drawn from the inland part of Wales speak Welsh only, but the great majority of the inhabitants speak English. The market has fallen into disuse, but there are three yearly fairs. Flint is a place of some resort as hot springs are hot and healthful.

The borough of Flint was established by charter of Edward I., and regulated by subsequent charters. The borough limits comprehend, beside the chapelry of Flint, the township of Colchill Fawr, in the parish of Holywell. By the 6th of Henry VIII., the corporation consisted of four aldermen and twelve councillors. The borough of Flint with its contributors was empowered to send one member to parliament in the reign of Henry VIII.; the right of voting was in the inhabitants paying seot and lot. The number of electors registered under the Reform Act is 355. Four aldermen and twelve councillors. The borough of Flint with its contributors was empowered to send one member to parliament in the reign of Henry VIII.; the right of voting was in the inhabitants paying seot and lot. The number of electors registered under the Reform Act was 361 as seot and lot voters, and only 14 as ten-pound householders, but many who really belonged to the latter class were included in the seot and lot voters. The living of Flint is a perpetual curacy of the yearly value of £200. The incumbent is a vicar chosen by the contributories of the great tithes. Northop is the mother church to Flint.

There were at Flint, in 1833, a national school for 140 children of both sexes, partly supported by subscription; three Sunday-schools, with 200 children; and three Sunday-schools with 418 children. There are few children in the borough unable to read. (Parliamentary Returns, Reports of Corporation Commissioners, &c.)

Mold, the present county and assize town, is in the hundred of Mold, and on the west bank of the river Alyn; it is 124 miles from London, on the road to Flint, described above. Mold is called in Welsh, 'Yr Wyddgrug,' a holy hill, which designation it owes to the 'Bailey hill,' an eminence partly natural and partly artificial, on which formerly stood an ancient castle. There is no certain mention of the place until the time of William Rufus, when the castle was in possession of the English. In a.d. 1114 this castle was stormed by the Welsh, under their Prince Owen Gwynedd, and razed. It was afterwards rebuilt, and remained a castle until the Conquest, when it was granted to the Welsh. Of the castle itself there is no part remaining; but the ditches which defended it, or separated its parts from each other, may still be traced. 'The Bailey hill,' so called from the Bailla or courts of the castle, is even now of difficult access; its summit, which was levelled by art in order to the construction of the antient fortres, commands a view of the country round of no great extent but of considerable beauty. The site of the castle is completely covered with thriving plantations of larches and other trees. The town, called the main street, with two streets intersecting at right angles: the houses are different, nor are there any public buildings except the church, two or three dissenting meeting-houses, and a school-house. The church, a rich and beautiful specimen of the perpendicular style, is 120 feet long, 70 feet broad, and 70 feet high, and is supported by massive piers, and looks more like a cathedral, and a square embattled tower enriched with sculpture and crowned with pinnacles: this tower, though of later date than the body of the church, is of similar architecture. The interior of the church is handsome: the piers and arches are very light and elegant; there are some portions of ancient stained glass and several monuments. These are held in a private house hired for the occasion; but it is in contemplation to erect a county hall and prison.

The population of the township of Mold was, in 1831, 3133, of which about one-fourth was agricultural. The entire parish, which contains ten townships, beside that of Mold the赶紧 possibilities of the surrounding districts of North and Mid Flint, has an aggregate population of 9385 persons, of which more than a third was agricultural: the extensive coal-pits and lead and iron mines in the parish gave employment to 629 labourers. In the town of Mold 230 persons were engaged in the manufacture of lead and iron; the flax and flax-garnishing, and fire-bricks are made in the parish. There are two weekly markets (held on Wednesday and Saturday), and four annual fairs.

The living of Mold is a vicarage, in the gift of the bishop of St. Asaph, of the yearly value of £32l. 4s. 8d. The perpetual curacies of Nerquis, yearly value £92l. and Treiddyn or Treidbyn, yearly value 78l., with a glebe-house, are in the gift, the first of the vicar of Mold, and the second of the bishop of St. Asaph.

By the Reform Act, Mold was made a parliamentary borough contributory to Flint: the borough comprehends the township of Mold, which contained, according to the Report of the Boundary Commissioners, about one hundred and fifty houses, worth 10l. a year or upwards: of these a number were public houses.

There were in the whole parish, in 1833, two national schools, with 122 children, partly supported by an endowment; two other partly endowed schools with 122 children; thirteen unendowed day-schools with 331 children; and ten Sunday-schools with 1877 scholars, some of whom were probably adult and even aged persons.

Caerwale, or Caergwrle, is also on the right or west bank of the Alyn, below Mold, 187 miles from London, about 7 from Mold, and 13 from Flint. It is in the parish of Hope, and was purchased in 1653 by Lord Corgi by Arthur, 1st Earl of Arundel, of the thirteenth, and gave name to the estate. The names Caerwale is with considerable probability derived from Ceor Gwrawate, 'the camp of the giant legion,' from the 29th Roman legion, which was named 'Vixiri,' and had its headquarters at Deva (Chester). In the sixteenth century it was a market town; the conjecture is confirmed by the circumstance of a Roman sudadary, or vapour bath, hollowed out in the rock, roofed with polished tiles, on some of which was an inscription 'Legio XX,' having been found here. Some ancient earthworks are still visible. The town is small, but the ruins of a castle are still visible in the neighbourhood. The Roman outpost is supposed to have been on the spot now occupied by the ruins of the castle.

The oblong form of the castle, its comparative deficiency of towers, and the general agreement in structure with other castles whose origin is known, lead to the conclusion that it was of Welsh rather than Saxon origin. Previous to the formation of Wales, it changed masters more than once, and appears to have been known by the English under the name of Hope Castle, and gave name to the estate. A town, called the conjecture is confirmed by the circumstance of a Roman sudadary, or vapour bath, hollowed out in the rock, roofed with polished tiles, on some of which was an inscription 'Legio XX,' having been found here. Some ancient earthworks are still visible. The town is small, but the ruins of a castle are still visible in the neighbourhood. The Roman outpost is supposed to have been on the spot now occupied by the ruins of the castle. A town, called Caerwale or Caergwrle, is also on the right or west bank of the Alyn, below Mold, 187 miles from London, about 7 from Mold, and 13 from Flint. It is in the parish of Hope, and was purchased in 1653 by Lord Corgi by Arthur, 1st Earl of Arundel, of the thirteenth, and gave name to the estate. The names Caerwale is with considerable probability derived from Ceor Gwrawate, 'the camp of the giant legion,' from the 29th Roman legion, which was named 'Vixiri,' and had its headquarters at Deva (Chester). In the sixteenth century it was a market town; the conjecture is confirmed by the circumstance of a Roman sudadary, or vapour bath, hollowed out in the rock, roofed with polished tiles, on some of which was an inscription 'Legio XX,' having been found here. Some ancient earthworks are still visible. The town is small, but the ruins of a castle are still visible in the neighbourhood. The Roman outpost is supposed to have been on the spot now occupied by the ruins of the castle.

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Reform Act, in the inhabitants paying scot and lot; the constituency was left untouched by that Act. The number of voters is about 120; the number of houses worth 10l. a year or upwards is about 20. The living is a vicarage, in the gift of the bishop of St. Asaph. The borough had once a charter and a municipal government; but the privileges of county town, and rights of franchise, were given up in 1745, but was taken by General Mytton, a.d. 1666, and in the same year ordered by the parliament to be dismantled.

The village of Rhuallan consists of one principal street running down to the Clwyd and some smaller streets. There are and much more than two houses of the yearly value of 10l. or more. The principal buildings are the great church, the market house, built at the expense of the county eleven or twelve years since. There is a bridge over the Clwyd of two arches, rebuilt or repaired about a.d. 1695. The castle of Edward I. is on the bank of the Clwyd, a little way above the bridge. It was built of red sandstone from the neighbouring rocks and formed a square externally (as we gather from Pennant's description), having at two opposite angles double round towers, and single ones at the other angles the court-yard was an irregular octagon. The ditch was large, and faced on both sides with stone. The castle on the side of the hill was defended by high walls and square towers. Three of the round towers had square angles and one of the square towers are tolerably entire, and there are vestiges of others. To the south of this castle, about a furlong distance, is a large artificial mound called the Toot-hill, on which the castle of Llewellyn ap Siyddwy and Robert or Cadwallader was built. It was a half mile south of the castle stood the priory of Black Friars, founded some time before a.d. 1268, and which continued till the dissolution. There is a fragment of this priory remaining which bears the marks of antiquity; the great gate and stairs disfigured in the time of the dissolution. The Toot-hill and the ruins of the priory are comprehended in an extensive area surrounded by a fosse which communicates with the castle ditch. The church is of tolerable size; but the architecture is nowise remarkable. There was in this ancient time a castle.

The population of the parish in 1831 was 1506, nearly half agricultural. The river Clwyd is navigable up to the bridge at spring tides for vessels of 70 or 80 tons. From seven to nine vessels ordinarily come in at spring tides. The lead mines to the north of the town give employment to about 300 men. There is a large export of corn; formerly considerable trade was carried on in timber and bark, but this has recently declined. A steam-packet plies between Clwyd and Liverpool. Rhyl, a municipal borough in the county of Denbigh, has become a bathing place. There are four fairs in the year; the weekly market has been discontinued for several years.

The parliamentary borough of Rhuallan (contributory to Flint) comprises the whole of Rhuallan parish, a great part of St. Asaph parish, and parts of the parishes of Cym and Diserth or Dyserth; it contains about 170 or perhaps 190 scot and lot voters. It was by charter a municipal borough, but the municipal privileges have fallen into disuse, except the annual appointment of two bailiffs, whose duty is to hold the quenery, and to make a vouchsafe of the annual value of 260l., in the gift of the dean and chapter of St. Asaph.

There were in Rhuallan, in 1833, two national schools with 140 scholars, one other day-school with 64 scholars, and five Sunday schools with 320 scholars. Caerwys is in Rhuallan hundred, near a small stream which runs into the Clwyd, 204 miles from London, through Overton, Wrexham, Caerwys, and Mold. Its name is derived from 'Cear', a fortress, and 'Wys', a 'summons' or 'station'; there is supposed to have been a seat of justice, for it is not far from the native princes and again after Wales had been united to England. The assizes for Flintshire were held here till the year 1675, when they were removed to Flint, and subsequently to Chester. The town is built on the banks of two streets crossing at right angles, and numerous copper Roman coins found here, have been considered as sufficient indications that this was a Roman station. In the middle ages Caerwys was the place of holding the Lladdodged, or general meeting of the Welsh barons.
This place, now a mere village, is seated on a wild and naked hill, surrounded by a bleak and barren district. It is very ill supplied with water, which is brought from a well a quarter of a mile distant from the village. The conveyance of water from this well forms a regular branch of traffic. Caerwys has a neat church, and meeting-house for Wesleyan Methodists. The conveyance of water is by a new pipe. The town hall is now used as a barn, and the former county jail is now occupied as a dwelling-house: the judges’ lodgings are now a mean hotel. The population of the parish, which is large, is not increased; some returns have been made in 1833, 1841, 1851, etc., but not with the same half agricultural. A little woollen cloth is made, and there is a small wire-mill.

The parliamentary borough, contributory to Flint, contains part of two of the four townships, Caerwys and Flint, or the Corwen and Trefriw, one of which the Reform Act has not altered, is in the inhabitants paying church and poor-rates and not receiving parish relief. The number of voters is about 130. There are some of the forms of a municipal corporation. There are two bailiffs, a recorder, a coronet and two constables. The recorder and crier are appointed by the lord of the manor; the crier annually nominates the bailiffs, and the constables are appointed by the jury at the court-leet. The functions of these officers are by no means active.

The living is a rectory and vicarage of the yearly value of 285£, with a glebe-house, in the gift of the bishop of St. Asaph.

There were in the parish in 1831 one national school with 11 scholars, and four Sunday-scholars with 4 scholars. Hawarden is in the hundred of Mold, a mile and a half or two miles from the south bank of the Dee, on the road from Chester to Holywell, seven miles from Chester, and 15 miles from London. The name Hawarden is Saxon, and the town was probably, at the time of the Conquest, one of the residences of Edwin, earl of Mercia. There was a castle here at a very early date: it was the residence of the barons of Montgomery or Mold, stewards to the powerful earls of Chester. This castle was destroyed, probably by Llewelyn, lord of Caernarvon, in 1221, but was restored the night of Palm Sunday, 1282, during a tempest which favoured the design, it was stormed by David, brother of Llewelyn, in their last struggle with the English. In the civil war of Charles I. it changed masters more than once, and was at the close of that contest dismantled. The remains of it are a fine circular tower or keep on the summit of a mound: this is the only part that is tolerably entire: there are no other remains except a few walls and the foundations of some rooms. The different parts of the fortifications are so well preserved that it is still possible to form an estimate of the size of the place. The castle is large and well built, and consists principally of one street nearly a mile long. The church is a plain but handsome building. The population of the whole parish in 1831 was 5414, of which less than one-half was agricultural: but the proportion of the population of the town was 1092, only less than one-seventh was agricultural. The township of Elwloe (Eulo) and Elwloe Wood is more populous than that of Hawarden. There are several coal-pits, brick and tile works, and potteries in the parish, and there are two mill-runs, one at Elwloe for conveying the produce of these to the river. Upwards of 250 men are employed in the coal-pits. There are iron works and a laboratory for making Glaster’s salts in the town. The market is on Saturday, and there are two yearly fairs.

History and Antiquities.—Flintshire, with the rest of North Wales, was comprehended in the territory of the Ordo activi, except those parts eastward of the Dee, which may be considered as having belonged to the Cornavii, who occupied the present county of Chester and much of the midland part of England. Pennan, a great village of the county west of the Dee was occupied in the summer by the Canti, Cangi, or herdsman of the Coruniavi, who passed the winter in the peninsula of Wirral in Cheshire, between the estuaries of the Dee and the Mersey. From these circumstances the name of Flintshire might have its origin. The territory comprehended the three modern Hundreds of Coleshill, Prestatyn, and Rhuddlan, took its name; being derived from Tag, fair, Cang, the name of the people, and Lie, a place. In the Roman division of Britain the Ordo activi was between the Mersey and Dee, which comprehended the territory of the Cornavii in that of Flavio Cesaris. Two Roman stations are by antiquaries fixed in or closely upon the borders of this county, Varo or Varis, at or near Bodfari, in the latter part of the district of the Cornavii, and near Bangor on the Dee. There seem reason to suppose that the Romans had posts at or near Flint, Mold, Caergwrle, and Caerwys. It is probable that they worked the lead mines of the neighbourhood, and that the posts were established with the view of protecting the trade to those mines from the Scythians or Gauls that have the episcopal jurisdiction of this county. There are places of worship for Wesleyan and Calvinistic Methodists.

There were in the parish in 1833 an infant or dame school with 2 children; an endowed grammar-school, and five other day schools with 783 scholars; and five Sunday-schools with 156 children.

Divisions for Ecclesiastical and other purposes.—The county of Flint is in the diocese and archdeaconry of St. Asaph, and in the ecclesiastical province of Canterbury, with the exception of the places mentioned below. It contains, as nearly as we can gather from a comparison of our authorities, thirty-three parishes or parochial chapels, of which six, viz. St. Asaph, Bangor, Bodfari, Eglwysfach, Iscoyd chapel, and Nanniew, extend into Denbighshire, Wrexham and Wrexford parishes, although extending into Flintshire, are not taken into the account, as they belong almost entirely to Denbighshire. Iscoyd (or Issoyd) chapel is a dependency of the rectory of Melps in Cheshire, in the diocese and archdeaconry of Chester, province of York, with which it is, as to the benefice, united. Penley chapel is a dependency of the vicarage of Egham in Shropshire, in the diocese of Lichfield and Coventry, and an uniting of the chapelry of St. Peter and Flint chapelry is the dependency of the vicarage of Northop; but these two (Penley and Flint) form distinct benefices. The chapelry of Overton is united with the rectory of Bangor; and the chapelleries of Buckley brought with the rectory of Hawarden; there are all in the diocese and archdeaconry of Chester; as are Doddleston, Hamer, and Worthenbury.

The number of benefices, deducting from the thirty-three parishes the chapelleries of Iscoyd, Overton, Buckley, and Brightmore, the total number of benefices is twenty-nine. Couci, Cilcon or Ksile, and Whistfield, is thirty-two. Of these, one, Caerwys, is a rectory and vicarage united; twelve are rectories (including the three sinecurists); twelve vicarages; and seven are perpetual curacies. The richest benefice is the rectory of Hawarden, the annual value of which is 2844£, with a glebe-house: the next, the rectory of Bangor, the yearly value of which is 1200£, also with a glebe-house; there are no other livings of so much as 1000£ a year; there are one between 700£ and 900£; one between 600£ and 700£; three between 500£ and 600£; four between 400£ and 500£; four between 300£ and 400£; seven between 200£ and 300£; four between 100£ and 200£; and four under 100£. Of one living (Hope) we have no return. The bishop of St. Asaph has twenty of the livings in his gift.

The county is included in the Chester circuit; the assizes and quarter sessions are held at Mold; but the county prison is still at Flint, the former county town.

Two members are returned from Flintshire, one for the county, and one for the borough of Flint.

The principal place of county election is Flint; and the polling stations are Flint, Rhuddlan, and Overton. The election of the member for the boroughs is held also at Flint.

The county is in the diocese of Chester, and is divided into the archdeaconries of Flint and Clwyd.

In the Saxon invasion Flintshire suffered. At Bacheur or Bangor (the Roman Bovium) was a vast monastery. [BANGOR.]

The great dyke which Offa, king of Mercia, built along the frontier of his own dominions and that of the Welsh, may yet be traced to the hills which skirt the valley of the Clwyd, running across the south-western part of Flintshire. The greater part of the county was on the Mercian side of the dyke. Wat’s Dyke, another ancient rampart, is also to be traced running through a considerable part of the county. The territory between the two is said to have been neutral.

About a year after Offa’s death (A.D. 796) a fierce battle was fought within the border of the county in the marshes between Rhuddlan and the sea, between the Britons or Welsh and the Saxons: the former were defeated with dreadful slaughter and lost their king Cadwallon: a plains
Welsh sir, Morfa Rhuddlan, preserves the memory of this disastrous day. Immediately after the capture of Chester by Egbert of Wessex, Flintshire, destitute of the mountains and fastnesses which protected the other parts of North Wales, was easily overrun by the Saxons, who gave new names to the towns, villages, and hamlets which had been named by the Saxons settled in the county in which they held lands under the governors or earls of Mercia. It appears however to have come again under the power of the Welsh princes, and was cruelly ravaged in the reign of Edward the Confessor by the Saxons under Harold: it was reoccupied from the Welsh by Robert de Rotheslal, (Rhuddlan) nephew of Hugh Lupus, earl of Chester, who reformed Rhuddlan Castle. In Domesday Book a great part of the county of Flint appears as a part of that of Chester, under the name of Atis cross hundred. It had been previously held with the rest of the county of Englesfield. In the time of the Domesday Survey there were only seven churches in the hundred, and the division into parishes had not yet been made. Atis Cross, from which the hundred took its name, was near the town of Flint. The pedestal was remaining in the earlier days of Mr. Pennant.

In the time of Henry II. the county appears to have fallen again into the hands of the Welsh, and was the scene of fierce contest when the English monarch attacked the principality of North Wales. He advanced from Cheshire into Flintshire. In the woody district of Coed Eulo, near Hawarden, a detachment of his forces fell into an ambuscade formed by the sons of Owen Gwynedd, prince of North Wales, who was encamped with his principal force near Basingwerk. The English were defeated with great slaughter, and pursued even to Henry's camp. The king himself was afterwards surprised in the defile of Colessell (Coleshill, near Flint), and with difficulty escaped himself from defeat. He succeeded however in reaching the Welsh, and afterwards obliged Owen to retreat westward over the Clwyd into Denbighshire. In subsequent periods antecedent to the final reduction of the Welsh, Flintshire continued to be debatable ground, and was the frequent scene of petty hostilities. In 1277 Edward I., who was then determined on the final subjugation of Wales, built, or else rebuilt Flint Castle, and strengthened that of Rhuddlan, and prepared, by making good roads, for the advance of his troops. In 1292 the Welsh princes, Llewynly and his brother David, rose in arms. David stormed Hawarden Castle, and in conjunction with his brother, invested Flint and Rhuddlan, the only places left to the English in the county; the former surrendered and the latter was hard pressed. The advance of the English under Edward changed the face of affairs; Caergarwie was taken by them and the siege of Rhuddlan raised, and the war carried westward into Caernarvonshire.

Flintshire appears to have been constituted a county in the time of Edward I.; it was part of the earldom of Chester, and long continued to be under the jurisdiction of the chief justice of Chester. The county and the borough of Flint, with its contributaries, received the privilege of sending representatives to parliament in the reign of Henry VIII.

In the civil war of Charles I. this county was the scene of contest. Hawarden Castle was held for the parliament, but was in 1643 taken by capitulation by the royalists. In the same year Flint Castle, which had been garrisoned for the king, was obliged to surrender to a parliamentary force under Sir William Bretenon and Sir Thomas Middleton. It fell however again into the hands of the royalists. In 1645 Hawarden was retaken by the parliamentarians; and in the following year both East and West Castle fell into their hands. All these castles were ordered by the parliament to be dismantled.

Among the remains of past ages the castles are the principal; those of Flint, Mold, Caergarwile, Rhuddlan, and Hawarden have already been noticed; the others are Ewloe and Basingwerk. The ruins of Ewloe are on the edge of a wooded dingle. It consists of two parts, an oblong tower, rounded at the side and guarded on the accessible places by a strong wall at some distance from it; and an oblong bastion connected with the tower by a circular wall, the top of it. The towers are overgrown with ivy, and command a view of three deep and gloomy wooded glens. The only vestiges of Basingwerk castle appear to be the foundations of a wall on the verge of Offa's Dyke, in the parish of Holywell.

Of the ancient religious edifices the principal are the cathedral of St. Asaph [St. Asaph]; the churches of Mold (described above), and Northop, near Flint; the abbey of Basingwerk, and the chapel over the celebrated spring at Holywell. [Holywell.] Northop church is in the perpendicular English style, and has a lofty, handsome, and well-proportioned tower. Basingwerk Abbey is of ancient but uncertain foundation. Bishop Tanner ascribes it to a general, second earl of Chester; bishop Fleetwood to Henry II.; Mr. Pennant thinks that its foundation was a yet older date, and probably due to one of the Welsh princes. The monks were of the Cisterian order, and their yearly revenues at the dissolution were 157£. 15s. 2d. gross, or 150£. 7s. 6d. clear. Henry II. established here a house of Knights Templars. The remains consist of the refectory, the chapel of the Knights Templars, and some remains of offices. The refectory is pretty entire; the Templars' chapel is spacious, with long narrow and pointed windows, and slender and elegant pillars between them on the inside. The architecture is generally in the early English style, but some part of the remains have the short columns and round arches of the Norman style.

(Arrowsmith's Map of England and Wales; Walker's Map of Wales; Conybeare and Philips, Outlines of the Genealogy of England and Wales; Pennant's Tour in Wales; Beauties of England and Wales; Parliamentary Papers.)

**Statistics.**

Population.—Flintshire is, except in one or two localities, principally an agricultural county. Of 14,234 males twenty years of age and upwards, inhabitants of Flintshire in 1831, there were 6048 engaged in agricultural pursuits; 630 in manufacture of silk and cotton goods, in making paper and manufacturing iron, copper, brass, and lead; about 230 were employed principally in the cotton manufacture; and about 40 weavers were scattered throughout the county.

<table>
<thead>
<tr>
<th>HOUSES</th>
<th>OCCUPATIONS</th>
<th>PERSONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HUNDREDS, &amp;c.</strong></td>
<td><strong>Occupied.</strong></td>
<td><strong>Unoccupied.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colehill</td>
<td>2,230</td>
<td>2,313</td>
</tr>
<tr>
<td>Mayor</td>
<td>2,054</td>
<td>2,218</td>
</tr>
<tr>
<td>Mold</td>
<td>2,460</td>
<td>2,532</td>
</tr>
<tr>
<td>Prestatyn</td>
<td>930</td>
<td>947</td>
</tr>
<tr>
<td>Rhuddlan</td>
<td>1,863</td>
<td>1,889</td>
</tr>
<tr>
<td>Holywell (town)</td>
<td>1,750</td>
<td>1,872</td>
</tr>
</tbody>
</table>

**Totals:** 11,716 12,138 64 541 4,660 3,101 4,377 29,924 30,088 60,012 14,234
The population of Flintshire each time the census was taken in the present century was—

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Increase per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td></td>
<td></td>
<td>39,622</td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td></td>
<td></td>
<td>46,518</td>
<td>17.40</td>
</tr>
<tr>
<td>1821</td>
<td>26,733</td>
<td>27,051</td>
<td>53,784</td>
<td>15.62</td>
</tr>
<tr>
<td>1831</td>
<td>29,924</td>
<td>30,089</td>
<td>60,013</td>
<td>11.58</td>
</tr>
</tbody>
</table>

Showing an increase between the first and last periods of 23,090, or nearly 51 per cent., which is, however, below the general rate of increase throughout England.

**County Epizootics, Crime, &c.**—The sums expended for the relief of the poor were—

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1811</td>
<td>£ 15,143.4.</td>
</tr>
<tr>
<td>1821</td>
<td>£15,170. 7.2.</td>
</tr>
<tr>
<td>1831</td>
<td>£26,539.</td>
</tr>
</tbody>
</table>

The sums expended for the same purpose in the year ending March 1836, was 16,090l. 3s.; and assuming the same rate of increase in the population since 1831 as in the ten years preceding that period, the above sum gives an average of rather more than 3s. for each inhabitant. All these averages are below those for the whole of England and Wales.

The sum raised in Flintshire for poor-rate, county-rate, and other local purposes, in the year ending the 25th of March 1833, was 25,191l. 1s., and was levied upon the various descriptions of property as follows:

<table>
<thead>
<tr>
<th>Description of Property</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>On land</td>
<td>£24,250.1</td>
</tr>
<tr>
<td>Dwelling-houses</td>
<td>2,176.0</td>
</tr>
<tr>
<td>Mills, factories, &amp;c.</td>
<td>941.15</td>
</tr>
<tr>
<td>Manorial profits, navigation, &amp;c.</td>
<td>823.5</td>
</tr>
</tbody>
</table>

The amount expended was—

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1836</td>
<td>£25,487.13</td>
</tr>
</tbody>
</table>

The whole saving effected in 1836 as compared with 1834 was therefore 432l. 12s., or not quite 16 per cent.; and the saving in the expenses for the relief of the poor was 3,575l. 10s. rather more than 17 per cent.

The county expenditure in 1834, exclusive of the relief for the poor, was 3120l. 14s. 9d., disbursed as follows:

<table>
<thead>
<tr>
<th>Description of Expenses</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges, building, and repairs</td>
<td>£694.16</td>
</tr>
<tr>
<td>Gaols, houses of correction, &amp;c., and maintaining prisoners, &amp;c.</td>
<td>£751.5</td>
</tr>
<tr>
<td>Shire-halls and courts of justice, building, repairing, &amp;c.</td>
<td>£509.17</td>
</tr>
<tr>
<td>Prosecutions</td>
<td>£525.15</td>
</tr>
<tr>
<td>Clerk of the peace</td>
<td>£144.10</td>
</tr>
<tr>
<td>Conveyance of prisoners before trial</td>
<td>£32.10</td>
</tr>
<tr>
<td>of transports</td>
<td>£34.12</td>
</tr>
<tr>
<td>Vagrants—apprehending and conveying</td>
<td>£5.19</td>
</tr>
<tr>
<td>Coroner</td>
<td>£139.10</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>£291.28</td>
</tr>
</tbody>
</table>

The number of persons charged with criminal offences, in the three specified periods ending with 1820, 1827, and 1834, were 84, 87, and 171, respectively; making an average of 12 annually in the first period, of 11.5 in the second period, and of 24 in the third period. The number of persons tried at quarter-sessions, in respect to which any costs were paid out of the county-rates in the years 1831, 1832, and 1833, were 14, 6, and 13 respectively. Of this number there were committed for—

<table>
<thead>
<tr>
<th>Type of Offence</th>
<th>1831</th>
<th>1832</th>
<th>1833</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felonies</td>
<td>13</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Misdemeanors</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The total number of committals in each of the same years were 14, 6, and 13 respectively; of whom 1831, 1832, 1833.

The number convicted was 14 5 12, acquitted 1 1 1

Discharged by proclamation.

At the assizes and sessions in 1836 there were 31 persons charged with crimes in this county. Of this number 10 were charged with offences against the person, 4 of which were for common assaults; 1 for an offence against property, committed with violence; 15 with offences against property committed without violence; and 5 for poaching. Of the whole number of offenders 21 were convicted and 10 acquitted, or no bill found against them. Of the number convicted 1 was transported for life and 3 for 14 years; 6 were imprisoned for one year and 10 for six months and under.

Of the total number of offenders, 28 were males and 3 females. Among the whole number the worst received superior instruction; 3 could read and write well; 18 could read and write imperfectly; and 10 could neither read nor write. The proportion of the offenders to the population was, in 1836, as in 1824, assuming that the population has increased since 1831 in the same proportion as it had done during the ten preceding years.

The number of persons in confinement in the county gaol at Mold, in 1826, exclusive of 2 debtors, was 9, viz.:—

<table>
<thead>
<tr>
<th>Type of Offender</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felonies</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

The whole of whom were above 17 years of age; 2 of them were awaiting their trials. The total number of persons committed to the gaol in the course of the year from Michaelmas to Michaelmas, 1826, was 67; and the greatest number in custody at any one time was 18. Of the 9 prisoners above mentioned 2 had been committed once and 1 twice before; and 3 persons, probably three former offenders, were set to bad labour, 'wheeling and brushing copperdross for road materials.' The average cost per week of each prisoner for food and fuel was 2s. 2d.

The number of turnpike trusts in Flintshire, as ascertained in 1834, was 11; the number of miles of road under their charge was 35; the annual income arising from the tolls and parish composition was 13,918l. 13s. 2d., and the annual expenditure 16,211l. 12s. 9d.

The number of persons qualified to vote for the county members of Flintshire was 2,151, being 1 in 29 of the whole population, and 1 in 7 of the male population above twenty years of age. The expenses of the last election of county numbers to parliament were to the inhabitants of the county 74l. 9s. 6d., and were paid out of the general county-rate.

There are four savings' banks in this county. The number of depositors in each of the various savings' banks in 1835 and 1836 were distributed as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Depositors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1835</td>
<td>1,941</td>
</tr>
<tr>
<td>1836</td>
<td>2,225</td>
</tr>
</tbody>
</table>

The various sums placed in the savings' banks in 1835 and 1836 were distributed as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount of Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1835</td>
<td>£60,945</td>
</tr>
<tr>
<td>1836</td>
<td>£65,067</td>
</tr>
</tbody>
</table>

The education—The following summary is taken from the parliamentary inquiry on education, made in 1835—

<table>
<thead>
<tr>
<th>Description</th>
<th>Schools</th>
<th>Scholars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of infants at such schools, ages from 2 to 7 years:</td>
<td>Males</td>
<td>Females</td>
<td>Sex not specified</td>
</tr>
<tr>
<td>1835</td>
<td>62</td>
<td>62</td>
<td>55</td>
</tr>
</tbody>
</table>
Brought forward

Daily schools

Number of children at such schools; ages from 4 to 14 years:

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Males</th>
<th>Females</th>
<th>Sex not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>2,562</td>
<td>1,297</td>
</tr>
<tr>
<td>5</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>6</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>7</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>8</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>9</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>10</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>11</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>12</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>13</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
<tr>
<td>14</td>
<td>2,444</td>
<td>1,297</td>
<td>1,297</td>
</tr>
</tbody>
</table>

Total children under daily instruction, 6,146

Number of children and others at such schools; ages from 5 to 60 years:

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Males</th>
<th>Females</th>
<th>Sex not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>7</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>8</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>9</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>10</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>11</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>12</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>13</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>14</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
<tr>
<td>15</td>
<td>3,851</td>
<td>3,851</td>
<td>4,701</td>
</tr>
</tbody>
</table>

Total, 19,918

Assuming that the population between the ages 2 and 13 has increased in the same proportion as the whole population since 1821, we may by approximation suppose that the number of children between those ages in Flintshire, in 1834, was 21,162. A large number of scholars attend both daily and Sunday-schools, but how far duplicate entry has been thus made is uncertain. Eight schools, containing 360 children, are both daily and Sunday-schools, therefore as far duplicate entry is known to have been created. Most of the Sunday-schools consist of adult and aged persons as well as children; some are said to remain in them up to the time of their death. Making allowances therefore for these two causes of uncertainty, we may conclude that perhaps not more than three-quarters of the children between 2 and 15 years of age were receiving instruction in 1834.

The schools established by Dissenters included in the above statement are:

<table>
<thead>
<tr>
<th>Description of School</th>
<th>Scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>1,552</td>
</tr>
<tr>
<td>Daily schools</td>
<td>119</td>
</tr>
<tr>
<td>Sunday schools</td>
<td>77</td>
</tr>
</tbody>
</table>

Total, 1,648

The schools established since 1818 are:

<table>
<thead>
<tr>
<th>Description of School</th>
<th>Scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools and other daily schools</td>
<td>1,552</td>
</tr>
<tr>
<td>Sunday schools</td>
<td>119</td>
</tr>
</tbody>
</table>

Two boarding-schools are included in the number of daily schools as given above. No school in the county appears to be confined to the members of the Established Church, or of any other religious denomination, such exclusion being disclaimed in almost every instance, especially in schools established by Dissenters, with whom are included Wesleyan Methodists.

A leading library of books is attached to one school in Flintshire.

FLINTY-SLATE, or SILICIOUS SCHISTUS, is a substance which is found chiefly in beds in transition mountains, and it occurs in Saxony, the Harz, Bohemia, &c. It occurs also in Scotland, in the Pentland and Murrfoot Hills, and in the Isle of Skye, &c.

This substance is of various colours, grey, yellow-grey, and red; its structure is rather slaty; on the edges it is translucent; it is dull, or only glistening; hard, and broken with difficulty.

It contains about 75 per cent. of silica, the remainder being lime, magnesia, and oxide of iron.

The basaltic or Lydian stone, is considered to be a variety of flinty-slate; it has however a slatey structure, and is not so hard as flinty-slate. It occurs in Bohemia and Hungary, but was first brought from Lydia in Asia Minor, whence its name.

It is employed, when polished, for trying gold by a comparison of colours, and has thence obtained the name of touchstone.

FLOODEN FIELD. [JAMES IV.]

FLOOK, [ANCHOR].

FLO'RA, in the Roman mythology, was the goddess of spring and of flowers, and the wife of Zephyr. Flora was also the assumed name of a Roman courtesan, who instituted certain games or festivals called Florialis, which were celebrated at the beginning of May. The queen of the character performed dances and mimic fights, throwing beans and chick-peas among the crowd. Instead of the fights of wild beasts, hares and rabbits were exhibited and chased about on those occasions. The Ædiles presided at these games. (Cicero, de fam. x. 14.) The ground on which the games were performed is still called Campo di Fiora, and forms one of the squares of modern Rome, and serves as a market-place. Some pretend that the Flora who bequeathed this ground to the Roman people was a mistress of Pomponius, one of whose theatres are close by. But the floral games were instituted long before Pompey, at the beginning of the sixth century of Rome.

Floral games, 'jeux floraux,' was the name given to the poetical assemblies and competition for prizes held at Toulooz [CLEMENTINE DABRE].

FLORENCE, Province of (Compartimento di Firenze), one of the five provinces into which Tuscany is divided, is bounded on the north by the province of Bologna in the Papal State, on the north-east by the province of Lucca in the Papal State, on the east by the province of Arezzo, south by that of Siena, west by that of Pisa and by the duchy of Lucca, and north-west by the duchy of Modena. Its greatest length from east to west is about 70 miles, and its breadth about 60: its area is reckoned at 2,136,944 acres. It is divided into nine districts: the town of Florence is in the sixth; its ancient name is Flora, and its population is 681,000. (Repetti, Dizionario geografico della Toscana, 1837.) The surface of the country is in great measure mountainous, being intersected from north-west to south-east by the central Apennine range. That part of the province which lies on the north slope of the Apennines is called Romagna Granducale, and consists of high lands and narrow valleys, which form the beds of numerous rivers that flow towards the Adriatic. The greater and by far the finest part of the province of Florence lies south of rather south-west of the Arno; it includes the great valley of the Arno, which crosses it from east to west, and of numerous lateral valleys which follow the course of the rivers that flow into the Arno. The principal of these valleys on the left bank of the Arno are: 1, the Val di Greve, below Florence; 2, the Val di Ema; 3, the Val d'Oltredio; 4, Val d'Arno or of Prato; 5, Val d'Ombrone or of Pastia; 6, Val di Nievole, between the towns of Fucecchio and Lucca; the Florentine territory includes part of the Val di Lume, which is a tributary of the Serchio, and at its southern extremity it extends over part of the valley of the Cecina, a river that flows into the Mediterranean through the promontory of Pisa, a district of great woodland, rich in silk, and abundance of fruit. The mountains are planted with chestnut and timber trees, and afford abundant pasture. The farms are generally very small, and are mostly let to tenants-at-will on the metayer system. A great resource of the country is the manufacture of straw hats, the straw for which is that of a peculiar description of wheat cultivated for the purpose, and very thickly sown and cut down before it is ripe. The country girls and men employ themselves in plaiting this straw, and the farmers derive from its export great sums of money as their means of support. The appearance of the peasantry, especially in the Val d'Arno, is pleasing; there is an air of health, comfort, and cheerfulness, a smartness of dress and a cleanliness of the person, superior to what is seen in most other parts of Italy. Many of the women wear round beaver hats like the men. The other manufactures in the country are pottery and china ware, cloth, paper, leather, &c., mostly for internal consumption. The silk manufacture, once very flourishing at Florence, has greatly declined during the present century. Since the arrival of the country people are simple, sober, and decent. The church festivals, which recur at various epochs of the year, are days of mixed devotion and rejoicing, to which the people are much attached. Heinous crimes, such as murders or robberies, are of very rare occurrence. There are elementary schools in every commune, but without any obligatory law to enforce the attendance of children, as in Austrian Lombardy. There are besides grammar schools in the
towns, kept by the Scaligi, the Brothers of S. Filippo Neri, and other religious congregations. Lanenestean schools, holiday schools, and infant schools have been established of late years, through the exertions of benevolent individuals, among whom the Abate Lambroschi stands foremost. Upon the whole, although the towns are still well populated, they are more negociant than manufacturing. The persons in the country, a general refinement of manners and address, and a quickness of perception and justness of reasoning, are prevalent, to which the kind and friendly intercourse which exists between landlords and tenants generally contributes. Florence has generally been established use of the same oral and written language which is spoken with nearly equal purity by all classes of persons.

For administrative purposes the province of Florence is divided into 28 districts called cancelliere, which contain almost all the communes of the province, and are under the control of a communal council. The districts have each a political governor, called cancelliere, and are named from their chief towns as follows:—1. Bagno in the valley of the Savio, near the borders of Papal Romagna, contains two communes and 4353 inhabitants; 2. Galenza in the valley of the Bidente or Romo, two communes and 4353 inhabitants; 3. Rocca S. Casciano in the valley of the Rabbio and Montone, five communes and 11,528 inhabitants; 4. Terra del Sole in the valley of the Moretto, one commune and 3453 inhabitants; 5. Magliana in the valley of the Bomba near the borders of Facenza, one commune and 4110 inhabitants; 6. Marzabotto in the valley of the Lambone, two communes and 1160 inhabitants; 7. Fiesole in the valley of the Sieve, one commune and 3511 inhabitants; 8. Migliarino in the valley of the Bidente or Romo, one commune and 1295 inhabitants; 9. Poggibonsi in the valley of the Fosse, Sarzana, one commune and 4910 inhabitants; 10. Pontassieve in the confluence of the Sieve and Arno, three communes and 18,575 inhabitants; 11. Figline in the Valdarno above Florence, three communes and 15,823 inhabitants; 12. Ponte a Sieve in the confluence of the Arno and Sieve with 9427 inhabitants; 13. Fiesole eight communes and 22,282 inhabitants. The town of Fiesole is much decayed, and hardly contains 3000 inhabitants. It is a bishop's see, and has a remarkable cathedral and several other churches. The town is surrounded by the Sieve river, and the country south of Florence contains six communes and 52,177 inhabitants; 15. San Casciano in the Val di Greve, three communes and 25,000 inhabitants; 16. Castel Fiesolitano in the Val d' Elsa, three communes and 26,114 inhabitants; 17. Fiesole in the valley of the Sieve, one commune and 43,009 inhabitants; 18. San Miniato, below Empoli, one commune and 65,733 inhabitants; 19. Cascina near San Miniato, one commune and 11,233 inhabitants; 20. Volterra, between the Ern and the Cecina, two communes and 43,009 inhabitants [Volterra]; 21. Firenze on the north bank of the Lower Arno, with two communes and 16,370 inhabitants; 22. San Giovanni in the Val di Nievole, four communes and 18,173 inhabitants; 23. Monte Catini in the same valley, two communes and 16,549 inhabitants; 24. Buggiano also in the Val di Nievole, two communes and 11,904 inhabitants; 25. San Marcello in the valley of the Lima, among the communes of the province, contains two communes and 10,140 inhabitants; 26. Pistoia has five communes and 43,433 inhabitants; 27. Potosteria di Pistoia, which include seven communes formerly subject to that town, and 36,326 inhabitants [Pistoia]; 28. Prato in the valley of the Bozzenio, has two communes and 38,852 inhabitants. The town of Prato, 12 miles north-west of Florence, at the foot of the Apennines, is a bishop's see, has a handsome cathedral, a college, besides a seminary for ecclesiastical students, a public library, a printing-press, an hospital, and a number of monasteries of coarse woolens, and about 10,000 inhabitants. The road from Florence to Prato crosses a fine level country, highly cultivated, and thick set with gardens and villas.

An important concern of the manufacturing, industry, commerce, and other statistics of this country are given under the head Tuscany. The climate of the province of Florence is generally healthy, and the winters are much colder than in the plains of Pisa near the sea; the highlands of the Apennines are bleak and barren; the lowlands are pleasant and fertile, but in many parts are subject to inundations of the Arno and its affluents.

FLORENCE, FIRENZE, or FIORENZA, the capital of the Grand Duchy of Tuscany, and an archbishop's see, is situated in the valley of the Arno, which river here divides into two unequal parts, the right and the left, which being both the right or northern bank. Its shape is a pentagon about six miles in circuit; it is enclosed by walls and has eight gates, six of which open to high roads leading to Arezzo, Sienna, Pisa, Florence, Bologna, and the principal town of the Casentino. On the north and north-west a fine plain a few miles in breadth is interposed between the town and the Apennines, which rise to the height of more than 3000 feet above the plain, and the upper ridge of which has a naked and barren aspect. Three or four thousand feet above the sea, and covered with garden and country. That part of the town which is south of the Arno rises to the declivity of a rather steep hill, which is partly enclosed within walls; the gardens of Boboli and the fort of Belvedere crown the higher grounds within the enclosure. Four bridges over the Arno connect two parts of the city; the handsomest of the four is the Ponte Santa Trinita which is adorned with marble statues, and the middle arch of which is 90 feet in span. In the central or most ancient part of Florence (for the town has been repeatedly enlarged, the actual line of walls dating from the 14th century,) which lies chiefly between the cathedral, the old market, the town palace, and the river, the streets are mostly narrow and irregular, and many of the houses are low and dirty; there are five churches and massive square stone palaces which look like fortresses, and were partly intended as such during the civil contentions of the communions. But the streets which lead from this central part to the first ward, called San Second, or San Secondo, which is still called Borgo, or subures, are laid out on a regular plan: the outer part of the town also is hansomely built, the houses being interspersed with gardens, especially in the neighbourhood of the city walls. The most remarkable abbreviations of this part of the town, which was begun at the end of the 13th century by Arnolfo di Lapo, was continued by Giusto and other successors, and Brunelleschi completed it in the 15th century by raising the noble cupola which excites the admiration of every visitor. In the upper part of this ward, which is surrounded by an open place; on one side of it rises a detached square tower or belfry 250 feet high, and before it is the baptistery of St. John, an octagon chapel rich with sculptures and mosaics. The whole group of buildings is cased in a venetian marble, and the exterior of each of the churches, and baptism is given by Scipiri, Descrizione dell' invigne Fabbrica di S. Maria del Fiore. Metropolitana Fiorentina, 2nd edition, 1756; and there are splendid engravings of it in the work recently published in 8vo. entitled Illustrazione Storica e Monumentale di Firenze, Palazzo Vecchio, or town-house, which was the seat of the government of the Florentine republic, a square massive-looking structure surmounted by a tower 260 feet high, from which the great bell used to toll to assemble the citizens or call them to arms. The square in front is adorned with a noble fountain and with marble and bronze statues. A description of this palace is given by Rastrelli, Illustrazione Storica del Palazzo della Signoria detta Palazzo Vecchiet, Florence, 1792. 3. Between the Palazzo Vecchio and the Piazza della Signoria is the Palazzo Uffizi, with arcades forming three sides of an oblong court 400 feet in length, raised by the Grand Duke Cosimo 1: the first story is occupied by the archives, the treasury, other public offices, and the Magliabecchi library, which contains 140,000 volumes. The second story contains the celebrated galleries, or museum, formed by the Medicis, which is one of the richest existing collections in sculptures, medals, cameos, bronzes, paintings, and other works of art. Full descriptions of it are given in the works of Filippo Baldinucci, Annali della di San Lorenzo, built by Brunelleschi, the numerous altars which are adorned with the paintings of Florentine masters. In the body of the church is the modest tomb of the elder Padre Pio, of the old sacrarium is that of his father, Giacomo, the principal member of the family and the founder of this church, and in the new sacrarium are the celebrated monuments of Giolano de' Menchi and of Lorenzo Duke of Urbino, by Michel Angelo; behind the choir is the sepulchral chapel of
Florence contains many charitable and useful institutions. There are nine elementary schools for boys, besides the schools kept by several religious congregations; four for girls; the Istituto della SS. Annunziata, for 800 girls who are boarded and instructed, and provided for when they leave the house; besides asylums for the orphans, the blind, the deaf and dumb, and other unfortunate persons; and the confeseriterie, or associations of charitable persons, for attending the infirm and burying the poor dead.

The medical college, connected with the hospital of Santa Maria Nuova is one of the best medical schools in Italy. The principal academies are that of La Croce: that of the fine arts, which reckons several distinguished members: and in 1743 they invited Sir J. Stuart, the engraver Monghon; and the Accademia dei Georgofili, which encourages agriculture, and publishes a quarterly journal, called ‘Giornale Agrario Toscano.’

The state of education among the Florentines is noticeable. Among the wealthy and fashionable class morals are pretty much on the same standard as in most other Italian cities; only there is perhaps greater outward decorum maintained. Fortunes are moderate, and mostly derived from landed property and manufactures. Among the old nobility are many individuals distinguished for their learning, and for the liberality with which they exert themselves in promoting useful and charitable institutions, such as schools, savings’ banks, and works of public utility.

In the Piazza del Duomo is the most pleasant place of residence in all Italy. Strangers have also the advantage of the best reading-rooms in the whole peninsula, which are supplied with foreign journals and literary periodicals. The price of provisions is moderate, the country very fertile, and the climate healthy, though very foggy in the autumn and cold in the winter. The whole neighbourhood of Florence is studded with villas, country-houses, and gardens, which made Ariosto say, that if they could be all collected within the enclosure of a wall and joined to the actual city, Florence would be more than equal to two Rome. Florence is 43 miles east of Pisa, 51 south by west of Bologna, and 145 north-west of Rome.

History of Florence.—This town owes its origin to a colony of Roman soldiers, sent to this place after the victory of Perusia, to whom he allotted part of the territory of the colony of Faesula, established about forty years before by Sulla. In the reign of Tiberius we find the Florintines mentioned by Tacitus (Annal. i. 79) as having sent a deputation to Rome to oppose the intended diversion of the course of the Clasius into the Arno, by which their fields would have been exposed to inundation. About A.D. 119 Hadrian, who had been prætor of Etruria under Trajan, restored, in the second year of his reign, the Via Cassia between Clusium to Florence. Little is known of Florence under the empire, and hardly any remains exist of that period, except some relics of an amphitheatre, and a few inscriptions. Christianity seems to have been established at Florence in the third century, and several martyrs are recorded there in the early part of the fourth century. Bishop of Florence attended a council at Rome. About 405 the town was threatened by the Goths under Rada- gius, but was saved by Stilicome, who defeated the barbarians in their neighbourhood. In 424, being again attacked by the Goths under Ulfilas, it was successfully defended by a detachment from the garrison which Belisarius left behind it. In 553 the Florentines sent a deputation to Narses to propitiate that commander in their favour. The Lombards afterwards occupied Florence, apparently without violence, and Tus- cany was divided by the division of the Visigoths. The whole, Florence seems to have escaped comparatively unhurt the ravages of the northern invaders, owing probably to its situation. Charlemagne having conquered the Longobards, organized the various provinces of their kingdom, and was appointed at Florence by Pope Gregory II. duke, and afterwards count, under whom were various officers called scabini, vicarii, vicodomini, advocates, and cen- terari, who by the Capitularies of the year 809, ch. xxix., was to be chosen by the count and the people together. Thus a municipal government, in less than a century, established.

In the eleventh century, when Italy began to be involved in the long quarrel between the church and the empire, Florence with the greater part of Tuscany was under the temporal dominion of the house of Taddeo degli Strozzi, and left her inheritance to the Roman see. From that time the towns of Tuscany began to govern themselves as independent commonwealths, and the popes favoured this state of things. Florence had then a very limited contado, or territory, extending about 16 miles in length, and about 12 in breadth; and other dukedoms were formed; but the industry and speculative spirit of its citizens wonderfully enriched them. They had commercial establishments in the Levant, in France, and in other parts; they were money-changers, money-lenders, jewellers, and goldsmiths. The See of the city was called the Pieve of 1113, while the Countess Matilda was still living, the citi- zens of Florence took up arms to repel a new director or vicar sent by the emperor and accompanied by a troop of armed men furnished by the neighbouring feudatories. They met him at Ocesto, and in 1013, the count Cadolingi, about six miles west of Florence: Robert the imperial vicar was killed in the conflict, and his men were routed. This was the first military exploit of the Florentine community, and from that time Florence began to be numbered among the great cities of Italy, and left her inheritance to the Roman see. From that time the towns of Tuscany began to govern themselves as independent commonwealths, and the popes favoured this state of things. Florence had then a very limited contado, or territory, extending about 16 miles in length, and about 12 in breadth; and other dukedoms were formed; but the industry and speculative spirit of its citizens wonderfully enriched them. They had commercial establishments in the Levant, in France, and in other parts; they were money-changers, money-lenders, jewellers, and goldsmiths.

In 1177 the first internal disturbance is raised by the Uberti, a noble family, supported by their dependents and friends, against the counts Cadolingi, who were elected by the various trades. The town was divided into focii, each headed by one turbulent family: they fought in the streets; from palace to palace, and tower against tower; and the situation was repeated many within the town more than 100 breccia high (about 150 feet). (Malisini, Cronica Fiorentina, cap. 80.)

In 1251 the whole town was divided into two focii, in consequence of a young man of the family of Buoninsegni, who was betrothed to a young lady, a niece of the Uberti,

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having broken his faith to her and married another of the family of Donati. The Uberti and their relatives stabbcd the promise-breaker in the street. The citizens took part, some with the Uberti, and others with the Buoninonda. As the Uberti were partisans of the emperor Frederic II, the two parties assumed the respective names of Guelphs and Guidelines, and the private feud was mixed up with the great quarrel which then divided all Italy. In the course of this struggle, something occurred, sometimes to the one side, sometimes to the other, and the leaders of the losing faction generally left the town to return at the first opportunity. The majority of the citizens however were Guelphs, and their party predominated in the town when the emperor Frederic II died in 1250. In 1252 Florence, not content with ruling over their community, sent forces against Pistoia. Pisa, and Siena, which belonged to the Guideline party, defeated the Pisans, made an incursion into the valley of Mugello against the Ubertini, who, in the words of Guicciardini, were great Guelphs, and gathered their forces in the Apennines, and sent another force into the Valdarno against the Florentine emigrants who had gathered there. All this occurred in 1252, which was then-forth remembered by the Florentines as the 'year of victories.' In 1254 they took Volterra. This was to Florence a period of great success, and it was then that they first coined their golden florins, of twenty-four carats, and of the weight of a drachm, bearing the impression of John the Baptist, the patron of Florence, and a lily, the device of the city. This latter impression was the first gold coin in all Italy. It is said also that about this time that the government was reformed. Instead of the consuls of the trades, a council of twelve naziani, or elders, was appointed, two for each district of the town, who were civil magistrate, and a podesta, who was chosen from some other town, whose decisions were without appeal. Another stranger was chosen as captain of the people, or commander of the militia, composed of the citizens formed into companies under their respective gonfalonieri, or standard-bearers. Their last two last officers were renewed every two years, and sometimes yearly. It was at that time a prevailing custom of the Italian cities to choose their podestas from among strangers, to avoid the risk of partiality arising from connexion and friendship; but the temptation of bribery or secret rewards was in all ages, a fruitful source of corruption.

Meantime the Guideline emigrants had gathered at Siena, and, being supported by Manfred, king of Naples, they took the field under Perinato degli Uberti, an able leader, who surprised the Florentines and other Guelphs of Tuscany, and put the hinders to flight at the height of miles from Siena, on the 4th September, 1250, and completely defeated them, with the loss of 10,000 killed and a number of prisoners. The Guideline entered Florence in triumph, the principal Guelphs who survived fled to Lucca, there being murdered, those of them who were taken. A new magistracy was formed from among the Guideline party, who took the oath of allegiance to Manfred. At a general diet of the Guideline cities, held soon after at Empoli, it was proposed to make Florence the ground, and distribute the inhabitants among other towns, as the bulk of the population was too much Guelp to be trusted; but Perinato indignantly resisted the proposal, saying he would sooner join the Guelphs than see his native town destroyed; this threat had its effect, and Florence was saved. Dante has conceived a strong passion for this patriotic act, in which the feelings of the citizen rose above the passions of the parision.

In 1255 the defeat and death of Manfred, at Rocchetta, turned the scale against the Guelphs. The Florentines in the following year drove away the garrison left by Manfred, and offered their allegiance for ten years to Charles of Anjou, king of Naples, who sent them 800 French horsemen under Gii de Montfort as his viceroy. A new organization of the government took place, which was divided among the various guilds. The council of 100, or 'buonomini,' who were to give their opinion first on every new measure, law, or tax proposed, after which the measure, if approved by them, was laid before the council of credenza, or 'trust,' a sort of senate composed of the gonfalonieri of the various guilds, and other notables, who deliberated a secret, and from them the motion came before the council of 100, consisting of deputies from all classes of citizens, presided over by the podesta, which gave its final sanction. The mode of electing these various councils is not very clearly ascertained. There was also much confusion between the legislative and judicial powers in all the Italian cities, and the laws and customs were generally so various, that it is difficult to separate the one from the other.

The Florentines now determined to form a league with the town of Pisa, against the Guelphs of Siena. In 1256 the Florentine emperor was removed, and the Guelphs of Pisa, thenceforth the most powerful of the city. This event did not affect the Florentines, the municipalities of Siena, and the other cities, and the Florentine government proceeded to the government of its territory. It was the beginning of the struggle, the more violent Guibleines were banished for a time, but their property was restored to them, and the rest of their party were allowed to return, and participate in the offices of the state. But the Guibles were stronger, and did not let up their penechions towards the Florentines. From this epoch and for the next thirty years we have a faithful guide among the intricacy of the internal feuds of Florence in the chronicle of Dino Compagni, from whom a brief account of those transactions in which both himself and the poet Dante acted a part, is given under the head Dante. The institution of the Priori, or supreme magistrates, who were chosen from among the higher trades, one for each district or ward of the city, and met every two months, dates from this epoch, and was the beginning of the government, to the exclusion of the nobles, which made the latter more desperate, and led to a perpetual recurrence of slaughter, banishment, and confiscation.

(Aistoria Fiorentinii, prémoni, lib. iii.) But Machiavelli seems to have overlooked the difference in the condition of the various Italian cities, at this period, from the original inhabitants, while at the same time the nobles of these cities were generally foreign strangers who had asked for and obtained the freedom of the city, or citizen families who had obtained titles of nobility from the emperors or other foreign rulers. The nobility of the Feudal and the nobility of the Arbia, which was the origin of the former, the Fiorentines besought and sued for Pisa by Hannibal in the year 1306. The siege was attended with circumstances of the greatest enormity, like most of the wars of the Italian cities in the middle ages, and ended with the eviction of the Florentines from the towns and liberties of the Arbia. But in 1333 Ugrovceo della Fagnana, at the head of the Guibileines of Pisa, completely defeated the Florentines, joined by the other Guibleines of Tuscany, at Monte Castello, in the Val di Nievole. But Ugrovceo himself being driven away from Pisa for his tyranny towards the citizens, Florence had not to recover from its loss. Ugrovceo was succeeded in the command of the Guibleines of Tuscany by Castruccio Castracani, lord of Lucina, who took Pistoia, and defeated the Florentines in a pitched battle at Altapalzzo. The emperors then joined the Castracani, in 1334, and appeared advanced to within a mile of Florence, and had the bishop of Arzo joined him with his forces, he would have taken the town. But the Florentines received timely assistance from the Anjou king of Naples, while the emperor proceeded to the.defaultValue. The Castracani, whose cause however was not after with an irremovable loss by the death of Castruccio in September, 1333 (Castruccio Castracani). Charles duke of Calabria, from whom the Florentines in their distress had only expected aid, was already given by a tyrannical disposition, died about the same time. Dalmahovici observes, was the best ally of the Fiorentines in their most urgent distresses. While they were thus threatened by Castruccio, one of their principal men, who had deluded the virtues of Florence, had added greatly to their distress. In 1333 a great flood of the Arno carried away three bridges, part of the walls, and most of the streets of Florence under water, and caused heavy damage. Some years afterwards two more considerable
companies, Peruzzi and Bardi, failed in consequence of the loss of 1,363,000 golden florins, being capital and interest of sums which they had advanced to Edward III of England, and which he was unable to repay.

These facts give an insight into the sources of the extra-

ordinary wealth of the Florentines. These sources were twofold, the numerous manufactures at home and the trade and banking speculations carried on by Florentine merchants abroad. Among the manufactures the most important were those of woollen, and of woollen factories, and citizens of Florence were claimed from 1366 into 12 arti, or companies of trades or professions, seven of which were called arti maggiore, namely—1. lawyers and attorneys; 2. dealers in foreign stuffs; 3. bankers and money-changers; 4. woollen manufacturers and drapers; 5. physicians and apothecaries; 6. butchers; and 7. furriers. The arti minori, or lower trades, were originally five—retailers of cloth, smiths, shoemakers, butchers, carpenters, and masons; but they were afterwards increased to 14. Every citizen who wished to be eligible to office was required to inscribe his name on the rolls of one of the trades. Dante had his

inscribed on the roll of the apothecaries, although he never exercised that profession. Of the importance of their foreign trade, and the influence which the Florentine mer-

chants or bankers had attained in foreign countries, we have a precise account by the Duke of Lancaster in 1381. After his election, received the congratulations of foreign states, it was observed that no less than 12 envoys accredited to him on the occasion were citizens of Florence, on which Boniface exclaimed, that the Florentines constituted the fifth part of the kingdom of Naples.

Their armies, especially when upon a long expedition, were chiefly composed of mercenaries and auxiliaries, and mostly commanded by a foreign captain, or condottiere, by whom they were often hired and betrayed. The townsmen of Florence, however, were the real masters of their local statutes, and elected their own magistrates, like the municipi subject to antient Rome, but they had no share in the central government of the republic.

Fresh dissensions among themselves and an unfortunate cause against Pisa brought the Florentines look out again for a foreign protector. King Robert of Naples sent them one of his officers, Gauthier de Brissel, of French extraction, but born in Greece, who bore the title of Duke of Abene, and who had already some years before come to the assistance of Florence against Castruccio. Many of the citizens, weary of civil feuds, contrived to have him elected by acclamation lord of Florence for life, in 1342, thus superseding the ordinary government of the Priori and Consolombari. He began by putting to death or sending into exile a number of Florence's most unpopular families, and now kept the government in their own hands, and who were eponymous both to the nobles who were excluded from office and to the inferior orders who attributed to them all their troubles. Having a foreign force of Frenchmen and Ne-

apoli at his disposal, he first re-established in a branch, in order to reconcile the Pisans to their yoke; but all the antient and most opulent families of that city emigrated to Lucera, Sardinia, and Sicily, the young men engaged in the free companies of the various Condottieri; and Pisa, in losing its independence, lost its commerce, its population, and its prosperity.

The administration of the Alibizzi was overthrown by Cosmo de' Medici, a popular citizen and a prince in man-

ner, in 1343. From that moment the history of Florence became closely connected with that of his house, and the sequel is given under the head Medici.

The first house of Medici respected the republican forms, and were contented with exercising the chief influence in the state without the addition of a class of citizens. But the foreign wars which desolated Italy, must have continued to effect the fall of that republic, when a member of a collateral branch of the Medici, the line of Cosmo having become extinct, was placed by Charles V. as duke of Florence. (for Seco 1.) To this Medici dynastia was succeeded after the death of Cosmo by his son, Cosimo, who continued to rule till the year 1372, when, being extinct, the present, if we may so call it, was succeeded by Francis of Lorraine, afterwards emperor of Germany, and husband of Maria Theresa of Austria. (Tuscan.)

FLORES, an island 30 miles long, with a mean breadth of 9 miles, is one of the Azores, and situated in 39° 34' N. lat., and 13° 4 W. long. It derived its name from the multitude of flowers with which it abounds. There are two small towns on the east coast, called Santa Cruz and Barreiros. The island produces an abundance of wheat and pulse; and a great number of horned cattle of small size are bred. The number of inhabitants is said to be about 1400.

FLORES, sometimes called Endé, an island in the Indian archipelago lying between the latitudes of

between 120° and 123° E. long. Its length is about 200 miles from east to west, and its average breadth about 35 miles. The surface of the island is hilly, particularly on the south side, where there are several high volcanic mountains, from which hot springs arise. The principal port, called San Miguel, is on the south side of the island; it has an excellent harbour. Larrintuks, a town on the east side, on the straits of Larintuks, in 8° 45' S. lat. and 123° E. long, is in the possession of the Portuguese, who have established there the college of the Jesuits and the college of the Catholic faith. This is the only part of the island in possession of Europeans. Endé was formerly subordinate to the Dutch residency at Coopang in the island of Timor;
but in 1812 the Bugis inhabitants succeeded in expelling all Europeans, and have since refused to hold any intercourse with them. The coast is mostly colonized by Bugis and Malays, but the interior is inhabited by aborigines, about whom and about their customs and institutions little or nothing is known. The best known of this people are the Horries, who dwell on the islands of the Gulf of Siam and the Palaus, the latter inhabited by the Palaus, in whom persons the Papuans of New Guinea than any other inhabitants of the Eastern Archipelago.

FLORIAN, JEAN PIERRE CLARIS DE, was born of a noble family in the Château-Florian, in the Cevennes, in 1714. His character was very superior, and his studies were never interrupted; but, on his dying deeply in debt, Florian was obliged to look around him for some means of support. The Marquis de Florian, his uncle, who had married a niece of Voltaire's, took young Florian to Perpignan, where the philosopher spent two years in the company of the author of "Don Quixote." Here he spent 1768 partying with the Duc de Penthièvre, and finding that he had a passion for the army, that nobleman gave him a company of the dragoons de Penthièvre. He shortly afterwards retired from active service, and accepted the place of gentleman in ordinary to the duke, who treated him as a friend. Having now an opportunity to devote himself to literature, he produced in 1763 the romance of "Galatea," in imitation of the novels of Cervantes. His mother being a Castilian, he was perfectly familiar with the Spanish language. "Galatea," which was written in the well-known "Numa Pompius," published in 1766. The pastoral romance of "Estelle," which was produced two years afterwards, and was reckoned by critics his best production, caused but small sensation at the time, and has not yet put out a single number of little comedies, in the Italian style, with Arlechin for his hero, which were very successful. In 1791 he published his romance "Gonzalve de Cordoue," which was preceded by an historical notice of the Moors, which has been greatly esteemed. In 1792 he was banished from Paris by the decree published against the nobility, and retired to Seeaux, the inhabitants of which received him with cordiality, as he had always been, in conjunction with the Duc de Penthièvre, their benefactor. He was afterwards received into the Order of the Holy Spirit, and continued his labours at Port Libre, but he was soon liberated. His health was so affected by anxiety, that he died in 1794, having, during his incarceration, written the romance of "Guillaume Tell."

Florian seems to have been a writer who did little else than imitate, in an inferior manner, the authors who had preceded him. "Galatea" is an imitation of Cervantes; "Numa" of Fenelon's "Telemaque," and the fables of those of La Fontaine. His fables, which are well spoken of by Le Haras and other learned men, are not, indeed, as a fabulist, La Fontaine is alone his superior. "Numa" retains its place as a school-book. The translation of "Don Quixote," which is a posthumous work, is censured for its want of humour. An honourable trait of Florian deserves mention—never having been admitted to the school of the Duke of Penthièvre, he devoted much of the profits of his works to the debts of his family.

FLORIDA was the name given by Juan Ponce de Leon to the continent of North America, from having discovered it on Palm Sunday (called, in Spanish, Pasqua Florida) in 1512. During a great part of the sixteenth century the southern part of the eastern coast of North America continued to bear this name, which was gradually restricted to that portion of this coast now called Florida. This coast, which presents with a terraced border and comprehends a peninsula, lying between 25° and 30° 45' N. lat. and 80° and 83° W. long., besides a tract of land extending along the northeastern shore of the Gulf of Mexico, between 29° 40' and 31° N. lat. and 83° and 87° 20' W. long., is also brought into the United States, and adjacent country are called East Florida, and the remainder West Florida; the river Apalachicola being considered as the boundary between them. The length of the peninsula from Cape Sable, its most southern point, to the mouth of St. Mary's River, which separates Florida from Georgia, is about 90 miles. Its width between Vacacassa Bay and St. Augustine is about 90 miles, and the breadth is about the same towards its southern extremity; but the central part between Amaura River and Cape Romano is 120 miles wide. The tract along the Gulf of Mexico, from Cape Sable to St. Mary's River, is about 500 miles. Its width varies from 30 to 70 miles. The whole territory is calculated to be about 55,000 square miles, or somewhat more than that of England.

Opposite the southern extremity of the peninsula there is a series of keys (as they are called, a corruption of capes) and islands, mostly covered with wood. They begin on the west with the Tortugas, and continue for some distance eastward, but afterwards turn to the north-east and north, and terminate at Cape Florida. These islands, which are all named after the more celebrated ones of the coast, are connected towards their eastern end by narrow reefs, called the Florida Reefs, and both the Florida Keys and the Florida Reefs may be considered as constituting in this place the left bank of the Gulf Stream, the beginning of which may be fixed between the Ten Thousand Islands and the Bahama; but the extremity of this stream is ffected by the narrow sands of the coast, which are separated from it by narrow and shallow lagoons, which cannot be navigated even by vessels of small burtons. This coast has no harbours, except at the northern extremity, where that of St. Augustine has 10 feet, St. John 15 feet, and St. Mary's 20 feet water at high tides. The western coast of the peninsula and that of West Florida are also enclosed by elongated narrow sandy islands, though they do not form such a continuous barrier as along the eastern coast, some parts of the west coast being free from them. But this coast also has few harbours. Charlotte Harbour (between 26° and 27° N. lat.) has no great depth of water. Tampa Bay is spacious, and, it is said, admits vessels of the smallest tonnage. Pensacola, which has 21 feet water on the bar, and from 23 to 36 feet in the interior, which is spacious and convenient. It admits vessels drawing 20 feet, and is the deepest port on the northern coast of the Gulf of Mexico.

The 1794 coast is bordered, as far north as 29° N. lat., are low and flat, being mostly covered with swamps, and containing only moderate tracts of dry land intermixed with the marshy ground. It is in great part devoid of timber, and has only brackish water. The part which forms the peninsular base, and has many higher grounds in the interior rarely rise to the elevation of hills. This division contains better water, and is better drained; the swamps are not numerous, and are only of moderate extent. It is besides better wooded, and its soil, though generally sandy, is more fertile; yet in all Florida the proportion of good soil to bad is very small, and cultivation is confined to a few spots of moderate extent. In the northern part limestone is the prevailing rock, and some of the rivers run in different places for some distance under the surface. The drainage is described in the description of the peninsula.

The climate of Florida is very mild, and in the southern districts hot. South of 28° N. lat. snow is unknown, and frost, though occasional, is rare. The temperature of this tract approaches that of the West Indies. In summer the thermometer never normally rises above 97°, but in July and August even to 94°. The east side of the peninsula is warmer than the west, which is probably to be attributed to the high temperature of the Gulf Stream. At the equinoxes, especially in autumn, rain falls abundantly every day from eleven o'clock for several weeks. At this period strong gales are frequent.

The peninsula is drained by several small rivers, and by the St. John River, whose main branch, the Ocklawaha, is 150 miles, but not at all navigable by vessels of more than 40 tons. The treaty, which is the oldest, is about 80 miles, when it turns east, and joins the other branch, or proper St. John. Both rivers in their upper course form several shallow lakes, and, after their union, the channel of the river is more like an inlet of the sea than the drain of an inland lake. The river Apalachicola, which is the westernmost, and runs from 83° to 87° W. long., forms in its lower course, which is about 1,000 miles, a great number of islands and islets. This river empties into the Atlantic, and forms the boundary between Florida and Georgia, in the latter state near 31° N. lat., and flowing first southward about 40 miles, then turns with a bold sweep northward, in which direction it continues about 30 miles, and then changes its course again, and flowing southward, it falls into the Atlantic where it forms St. Mary's Harbour, the deepest port in the United States south of the Chesapeake Bay, on the Atlantic coast. The whole course of this river is about 110 miles.
The rivers which fall into the Gulf of Mexico rise either in Georgia or in Alabama. The most eastern is the Swa-
nee River, which rises in Georgia with two branches, the Alapa-
ha and Suwanee, which unite in Florida and fall into the
Gulf of Mexico at the northern extremity of the penin-
sula of Florida, after a course of upwards of 200 miles.
Farther west is the Okla-konnec, which also rises in Ge-
ergia: it runs about 125 miles. The next is the Appa-
lacchian, which rises part in New Hampshire and part in
the Chatahoocooee, rises near 35° N. lat., on the southern
divinity of the high table-land of the Appalachian system,
and runs first south-west and then south, in which direc-
tion it enters Florida, receiving on its boundary the Flint
River, which rises part in Illinois and part in Michigan.
This flows 210 miles before it joins the Chatahoocooee.
The united river is called Appalachiocola, which flows nearly
due south more than 70 miles, and is navigable for vessels of
considerable burden in all its extent. The united course of
the Chatahoocooee and Flint is about 210 miles.

The Perdido is a small river, and only remarkable
as a political boundary between Florida and Alabama. 
Florida has a considerable number of lakes, the largest
of which are in the swampy district of the peninsula.
The Lake of Mascon (between 27° 40' N. lat., and
the most extensive; but its dimensions have not been
ascertained. Lake George, which is an expansion of the
St. John's River, is 15 miles long and 12 wide; the depth
of the river at the closing points is 70 feet. There are also
the limestone formation prevails there are also
numerous lakes; but they are generally of small extent.

The climate of Florida is favourable to the cultivation
of most of the productions of the West Indies, where the
soil is of a sandy nature. It must be observed that this is
mostly in all the maritime parts, where the orange also,
the lime, and the shaddock succeed. Cotton, rice, indigo,
tobacco, Indian corn, and a great variety of fruits compose
the most important cultivated vegetables of Florida. The
rice, potatoes, and sweet potatoes, are cultivated in the
western districts, but the forests contain many other valuable
trees.

Wild quadrupeds of the larger description are not nume-
rous, except deer. Alligators, turtles, and snakes are very
common. Fish is extremely abundant, and of great variety.
Oysters are seen on the coast and on inland waters.

According to the census of 1830, the population of
Florida consisted of 19,210 free people and 15,510 slaves.
This scanty population of so extensive a country is ex-
plained by the circumstance of the inferior quality of its
soil. But it must also be observed, that a large segment of
the peninsula, along its western coast, is still in possession
of an Indian tribe, the Seminoles, a branch of the once
great and numerous nation of the Creeks. The number of
individuals composing this tribe is said to exceed 12,000.
Twice in a year, the king, as a person of state, visits some
of the whites; and when an armed force was sent against
them it was impossible to discover their lurking-places.
This war is still going on, but is not maintained with
vigour; and it is probable that the Seminoles will keep
possession of this tract of country, as the soil does not contain any
extensive tract fit for cultivation.

Florida not having been received into the Union as a
state, is only a territory, and in that capacity sends a dele-
gate to Congress. Its capital Tallahassee, a few miles from
the river Okla-konnec, contains about 1200 inhabitants.
The most important town is Pensacola, built on the bay
of the same name: yet its population does not much exceed
2000 souls. St. Augustine, on the shores of the Atlantic,
has been several times on the coast of Spain. In 1803, the
settlements of Creek emigrants were established by the
English, called Annastasia and New Smyrna; but they
no longer exist. Farther north is the fertile island of Amelia,
on which is a small town called Fernandina.

The first recorded settlement was formed in 1565 at St. Au-
tignne, which town, therefore, may be considered as the
oldest European settlement on the North American continent,
every those on the Mexican isthmus. The Spaniards kept
possession of Florida till 1763, when it was ceded to Eng-
lanud. It was retaken by the Spaniards in 1781, and
re- mained in their hands at the peace of 1783. In 1819, the
United States, being desirous of possessing a country which,
by its vicinity to the Gulf Stream, seems to give its posses-
sors a great command over the navigation between Euro-
pean and the countries lying about the Gulf of Mexico, entered
into a negotiation with Spain for the cession of Florida;
and a treaty to that effect was ratified by Spain in 1821.
The Spanish government, however, was not inclined to cede
the country; but the feebleness to which it was then re-
duced rendered it incapable of any resistance, and in 1821
it was taken possession of by General Jackson, by order of
the government of the United States. During the adminis-
tration of Mr. Jefferson two millions of dollars were appro-
priated for the purchase of Florida; but the negotiation at
that time was not completed.

FLORENCE. [Money.]

FLOREANUS, LUCIUS ANNUS, a native of Spain,
or, according to others, of Gaul, lived under Trajan and
remained in his government for the same time as Lucius
Julius Florus, who lived under Augustus, and to whom
Horace has addressed two of his Epistles; but as, in
the premonium to his history, Florus speaks of Trajan,
he cannot be the same person as Lucius Julius, unless we
may suppose him to belong to the same race of writers,
though the identity of the two writers is very doubtful. Lucius
Florus wrote a small work entitled Epitome de Gestis
Romanorum, in 4 books, from the foundation of the city
of Rome to the reign of Julian, and published it in 1804.
The author compiled his epitome from Livy and from other
writers whose works are lost. It is meagre and declaratory,
and is less a history than a panegyric of the Roman people.
Florus is also incorrect in his chronology and geography.
In his work, the author attempts to give what he says is
true, and corrects what he has found; as the work is, it is
irrupt and interpolated. The work is of some use as a
kind of substitute, however poor, for those books of Livy
which are lost. Some MSS. attribute Florus also to
the Epitome, or heads of contents, of the books of Livy.

FLORIS PERI, [ARRAGON.] 

FLORIS, [ARAGON.] 

FLORISAM, or FLOATSM, is such portion of
the wreck of a ship and the cargo as continues floating
on the surface of the water. Jetsam are goods cast into
the sea, and there sink and remain under water; and ligan
are those goods which are cast to a cock or by the
haur, in order that they may be found again.

These barbarous and uncouth appellations are used to
distinguish goods in these circumstances from legal wreck,
in order to constitute which they must come to land.

Jetsam, jetsam, or jetsam, belong to the king, or his
grantee, if no owner appears to claim within a year after
they are taken possession of by the persons otherwise en-
titled. They are accounted so far distinct from legal wreck,
that by the king's grant of wreck, flotsam, jetsam and ligan
will not pass.

Wreck is frequently granted by the king to lords of
menors as a royal franchise; but if the king's goods are
wrecked, he can claim them at any time even after a year
and a day. (Bd Com.) The same distinction, it is pre-
served, would prevail with respect to flotsam, jetsam, and
igan.

FLOUNDER. [Pluronectidae.] 

FLOWER. [Wheat.] 

FLOWER, a town in France, in the department of
Cantal, the capital of an arrondissement and the seat of a
bishops. It is on the right bank of the river Lende, a feeder
of the Tursy, which falls into the Lot, one of the prin-
cipal streams of the system of the Garonne, 289 miles from
its source. It is the capital of the department of Ver-
nonne and Perpignan. This town is said to derive its name
and its origin from a bishop of Lodove, who came into
Vergue to preach, and died there near the end of the four-
tenh century, and whose sanctity attracted so great a
number of pilgrims that it became the subject of an
eminent of basilics about 300 feet high, and enjoys, from
its elevated situation, a pure though keen air. The streets
are narrow and sombre in their appearance; the houses,
which are built of lava and covered with tiles, have a black,
and dismal look. The cathedral is small, but the nar-
row nave (which forms the entrance from Toulouse and Rodes)
thought tolerable in itself, is not advantageously situated.
The population of the town in 1832 was 3513; of the com-
une 6544. The inhabitants trade in corn and mules; they
manufacture linen cloth, ordinary woolens, and glass.
In the neighbourhood, but not in the town, metal pots and
FLO

FLORISTS.

Lord Bacon (Essay 46) calls a garden 'the pride of human pleasures'. Admitting and valuing fully the truth of the opinion, it must be owned, that it is a pleasure which is easily procured, and which lasts throughout the whole portion of the year. In saying that a garden is easily procured, we must understand to mean a garden in which the objects desired by the cultivator are simply in view. Where rare plants are wished for, the case is wholly altered; the first can be obtained at a small cost, but there is no limit to the expense of the second. It is of the method of cultivating and displaying flowers in a garden of the less refined sort that shall, in every thing relative to the work and to the great increase of these gardens that is visible; the smallest villa and parsonage, or the larger farm-house, are now rarely without their beds of flowers; and a few hints may be useful to instruct the cultivator. It is observable, whether a varieties of flowers cultivated are few in number, that they should be chosen with regard to the following qualities: the size, the brilliancy, and the smell of their blossoms, the variety of their colours, and especially the length of time, in which they continue to blow. The last point is a material, because, if it is disregarded, a large stock of plants will be requisite to keep up a succession, and the labour of planting and replanting, moving and removing, will multiply trouble and expense. As a very large majority of annuals are preferred for their colour and quality, and because the gardener must chiefly trust. Many of these plants not being sufficiently hardy to stand exposure to an English winter, some shelter must be provided for them during that season. Room for a conservatory, or cold frame, is not to be denied to the owner of the garden; they can be placed in windows and in passages, where they will remain in health, if in cold weather the house is continually inhabited. If this cannot be done, shrubbery plants may be well, though not so well preserved. The care of them is less, but the comfort of being in the garden in the beginning of winter, cutting back the branches, and shoveling the roots in a dry corner, where they need be taken early in the spring, and potted and watered in a sheltered place in the summer. The best method of keeping the soil at an even temperature is to have a brick in this manner, in which the soil will be about 100. Some of the finest flowers in the world are those of various colours mixed together; suitable space should be left for each plant to grow freely without interfering with or confusing its branches with those that are next to it. Flowers for the most part like a rich, light, new soil. The spot chosen for a flower-garden should be dry, open to the sun, and sheltered from wind and cold.

Beckeman (Hist. Inventions) says that it may be asserted with great probability, that the modern taste for flowers came from Persia to Constantinople, and thence was introduced into Florence, and France at the close of the 15th century. At any rate we find that the greater part of the productions of our flower-gardens were conveyed to us by that channel. The first public botanical garden in Europe was established at Pisa by Cosimo de Medici in 1543. The example of Pisa was soon imitated at Padua, Bologna, Florence, Rome, and other cities and universitie
Italy and Germany. The Dutch at this time began to exchange the bulbs for which their gardens were celebrated for the orange-trees of Genoa and Leghorn; Spanish flowers also found their way into Italy, and among them the double night-smelling jasmine, which was so highly prized by the governor of Pisa that he placed a sentinel to keep guard over the plant.

The gardens among the French was likewise derived from the Italian. Thus far the taste for flower-gardening had not passed the limits of favourable climates, but it continued to spread into colder countries. Germany and England followed the example of their neighbours. James I. of Scotland, who had a garden at Windsor Castle, where he kept a prisoner in the beginning of the fifteenth century; but gardens at that time were certainly very rare, and seem to have been rather formal shrubberies with clipped yew and other hedges, arbours, and avenues, than gardens containing herbs, grasses, and many flowering plants. The gardens at Nonsuch and Hampton Court were planted in Henry VIII.'s reign; at Hatfield, in Queen Elizabeth's time. Evelyn mentions in his Diary the most celebrated gardens of his day: from his account of them it will be seen that flowers were then generally cultivated, and that gardens had become a luxury on which large sums of money were expended. The prices which have been given for flowers at certain periods form a very curious portion of their history. The most curious instance of a mania (it can be more clearly discerned by those who possess the (Hist. Tropers, vol. i.) In the middle of the seventeenth century tulip roots of particular kinds were greatly sought after, and as their value consequently greatly increased, they became matter of speculation; roots were sold by public auction, and generally they were exposed to the view of all, and thousands of florins were given for some species; and when once it happened that there were only two roots of a kind called Semper Augustus to be had, the one at Amsterdam, the other at Haarlem, 4000 florins (about 400L. 10s.), together with the expenses of transport, due to the purchaser, were given for one root. Twelve acres of land were offered for a single root, and those who had not ready money promised their movable and immovable goods, lands, cattle, and clothes. The purchaser perhaps did not even receive the good; for at the bottom of all the confusion of cultivating it, and the transactions were purely speculative.

This extraordinary system of gambling can only be accounted for by the want of employment for capital. At the present time (1837), though gardens are maintained at a great cost, and the society that attends them is a very curious one, they are not considered as objects of speculation, but as matters of amusement. It was at the Cape of Good Hope and South America, and in the East and West Indies, that have been extremely numerous. (London's Cyclop. of Gardening.)

FLUCERINE, the name given to the native dracaena of Curium which occurs at Finze and Brodie near Falun, in Sweden. It occurs both massive and crystallized. The crystals are either six-sided plates or prisms; they have a yellow or reddish colour; fracture uneven; dull; translucent, in very thin fragments: when heated by a vessel of spirits of wine it becomes almandine. It dissolves in water; does not fuse; in the reducing flame it becomes colourless, and in the oxidizing flame, with borax and a phosphate, it yields an orange-coloured globule: when heated in a tube with an acid, the glass is corroded.

FLUUM, (Fluine), a mineral of the same description as feldspar, but of a more perfect and crystallized form.

FLUELLITE, a compound of fluoric acid and alumina, which occurs at Stenna-gyuw, in Cornwall, in octahedral crystals, the primary form being a rhombic prism: the crystals are colourless and transparent, with a vitreous lustre.

FLUENTS. [Fluxions.]

FLUID. This term is applied to substances of which the parts possess perfect mobility amongst themselves, but more rigorously it depends on the relative intensities of the forces with which they are linked together. Fluids of permanent form, denominated solids, these forces not only preserve the particles in a state of rest when undisturbed, but also, on the communication of a slight disturbance relative to their mean positions, reduce them, after the lapse of a very short time, to the places they possessed before; hence arises the permanence of figure and arrangement characteristic of solid bodies. On the other hand, the gases have an elastic or expansive power, which is usually attributed to the motion of the particles of air, induced in all substances by the communication of a high degree of heat; the particles of gases have therefore a tendency, when external forces are removed, to fly from their places in obedience to the impulsion exercised by the parts in their vicinity: they work through each other. But the conditions of the motion of any one particle are nevertheless limited by the condensations of the particles on which they impinge and the rarefactions of those which increase the distance. Therefore, even in a gas, the disturbance of a particle only makes itself felt in its mean position, and the condensations and rarefactions hence generated produce inequalities of pressure which propagate like motions in the particles in the vicinity. These motions, gradually conveyed throughout the entire mass, produce vibrations, the phenomena of sound, and, it is thought, those also of light.

This yielding to the internal forces called into play by the motion of the particles of a gas is by no means opposed to but rather implies their perfect mobility. If we diminish or increase their specific weight by changing the temperature, they will accordingly rise or sink amongst the myriads of particles by which they are surrounded. Yet they will not rise or sink as if in vacuo; for they still will be influenced by the impingements of the adjacent particles, and therefore their motions must suffer resistance.

But in liquids, which also come under the denomination of fluids, this alteration of density and elasticity is imperceptible in ordinary motions, from whence, in physico-mathematics, they are treated as incompressible bodies; still a small alteration of specific gravity is sufficient to produce a distinct motion on the particles subject to such change. By the application of a blow-pipe to the lower part of a glass vessel containing any liquid a portion of the air, confined between the glass and the water in contact with the heated part of the glass, is generated, and there is much reason to believe that many of the permanent currents of the ocean originate from a similar cause, namely, the unequal temperature of different parts of the same body. But, since the difference of their depths, or of the conductivity of the solid strata with which the fluid is in contact,

The particles of a fluid being thus surrounded by others which are subject to external forces, such as that of gravity, it is only an approximation to consider it as perpetual, so great would it be if continued uniform over any surface taken as a unit. The direction of such a surface is immaterial, for the particle can only be in repose when the pressures from all quarters are equal. When fluids are influenced by external forces, as such as the weight of the superincumbent mass; but in elastic fluids, as in air, the pressure is necessarily proportional to the elasticity of the particle which supports it; and this elasticity is known to increase with the diminution of the volume compressed; such fluids therefore, under the influence of external forces, acquire variable densities in their different parts.

We reserve for the articles HYDROPTATICS and HYDRODYNAMICS the principles from whence the equilibrium and motion which liquids and gases are subject to are deduced; and for the article TIDES the case when those forces are the attractions of the sun and moon upon the ocean.

The equilibrium of a body floating on a fluid depends on two simple conditions; namely, that the centre of gravity of the whole body and of the displaced fluid must be in a vertical line, and the weight of this displaced fluid must be equal to that of the body: but for the conditions of the stability of the equilibrium we refer to METACENTER.

When a body moves in a fluid it suffers a resistance depending on its shape and form, and when the body is supported by a parallel with the mass in which it moves the law of resistance is nearly expressed by the square of the velocity. This hypothesis was originally formed by considering that the number of particles on which the moving body impinges in a given time is proportional to the square of the velocity, and nearly, because the particles which have been struck form returning currents which interfere with this simple law; and, secondly, that the force with which it is impinged is also as its velocity, which must be modified from the same consideration. The nature of these currents has not been yet
investigated, and therefore the law of the square of the velocity is adopted generally as a first approximation, but the discovery of the true law would appear to be within the limits of calculation without aid from experiment, and is a subject worthy the attention of physical mathematicians.

The resistance of bodies only partly immersed in fluids, and having a depth bearing a sensible ratio to that of the fluid, as in barges towed along canals, is subject to laws far different from those which we have considered, for the quantity immersed is itself a function of the velocity, diminishing as the fluid velocity increases, so that the ratio of the increase of resistance due to velocity, this diminution due to less immersion permits the possibility of a minimum resistance. This important subject will be further considered in the article HYDRAULICS.

The term fluid has been extended to the supposed media through which the forces of electricity, galvanism, and magnetism act, but little that can be relied upon has been deduced from their supposed analogy with material fluids. A surer source of calculation is found in detecting the laws of their elementary actions of cohesion. The degree of heat required to produce this effect is different in different solids, but, cæteris paribus, it is always the same in the same solid: in many cases the transition from the solid to the fluid form is sudden, while in other instances solids pass through various intermediate states before becoming fluids. Of the first mode of becoming fluid ice and the metals are examples, and wax or tallow of the second.

As most solid bodies may be rendered fluid by heat, so many gaseous and fluid bodies are converted into solids by diminishing their temperature. Solid bodies in becoming fluid render latent a large quantity of heat; and on the other hand, fluid bodies in becoming solid evolve much sensible heat. The heat which is requisite to the fluid existence of a body is termed the heat of fluidity. These facts are proved by two simple experiments: Mix a pound of water at 32° Fahr. with a pound of water at 172°, and the resulting temperature will be the mean, or 102°. If a pound of ice at 52° be dissolved in a pound of water at 172°, the solution will have the mean temperature of 102°, but only 32°. As, then, the pound of ice, if being rendered merely fluid, absorbs 140° of heat, so the quantity of heat which becomes sensible when a pound of water at 32° is converted into ice at 32° amounts also to 140°. The actual quantity of heat may be rendered latent by different fluids as they liquefy depends upon the nature of the substances: thus, according to Dr. Irvine, the under-mentioned bodies contain the annexed quantities of heat when rendered fluid:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Heat of Fluidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur</td>
<td>143° 65° Fahr.</td>
</tr>
<tr>
<td>Spermaceti</td>
<td>145°</td>
</tr>
<tr>
<td>Lead</td>
<td>163°</td>
</tr>
<tr>
<td>Bees' wax</td>
<td>192°</td>
</tr>
<tr>
<td>Zinc</td>
<td>493°</td>
</tr>
<tr>
<td>Tin</td>
<td>500°</td>
</tr>
<tr>
<td>Bismuth</td>
<td>550°</td>
</tr>
</tbody>
</table>

The nature of fluidity will be further considered when heat is treated of.

**FLUOBORIC ACID, or FLUORIDE OF BORON,** was obtained by Gay-Lussac and Thénard by heating a mixture of fluor-spark, or fluoride of calcium, and vitrified boracic acid. In this operation the oxygen of the boracic acid probably combines with the calcium of the fluoride of calcium and converts it into oxide of calcium or lime, and the fluorine and one third of the oxygen is given up as gas in question. The properties of this gas are, that it is colourless, has a pungent odour, is deleterious to animals, and extinguishes flame. It reddens litmus paper strongly; and when bubbles escape into the air, they combine with moisture and produce a very white dense fume. The specific gravity of this gas is stated differently, from 2'31 to 2'37. It consists, according to Dr. Thomson, of—

| One equivalent of fluorine | 18 |
| One equivalent of boron | 16 |

**Equivalent 34**

Water dissolves about 700 times its volume of this gas.

This solution is caustic, and emits fumes, and was found by Berzelius to contain boracic and fluoridic acids, probably derived from the decomposition of water, which supplied oxygen to the boron and hydrogen to the fluorine. This solution does not act upon glass, nor does the gas itself, but they readily decompose animal and vegetable substances. Thus, when the jar of the gas over mercury is decomposed and charred as if burnt, by the abstraction of the elements of water from it, for which the gas has so powerful an affinity. When potassium is put into this gas it burns, and a brown compound of boron and fluorine is obtained.

This compound acid combines with certain bases, as ammonium, to form salts, which are termed fluoborates; but they are quite unimportant.

**FLUOR SPAR, Fluor, Fluorate of Lime,** is a well-known mineral which occurs in many parts of the globe, especially and in great plenty in Cornwall, Derbyshire, and Durham. It occurs both crystallized and massive. The primary form of the crystal is a cube, the cleavage is parallel to the planes of the regular octahedron, distinct, but seldom with perfect surfaces; it assumes a vast number of secondary forms, as the octahedron, rhombic dodecahedron. The late W. Phillips mentions his possessing at least 70 beautiful varieties of form, and he has figured a fragment of a crystal from Devonshire which if it were perfect, would exhibit 325 planes. It occurs colourless, and of almost every colour, as grey, purple, black, brown, red, yellow, green, and blue; in Derbyshire the last is the prevailing tint, and the massive fluor of that county is termed by the miners Blue John. It is frequently transparent, but more commonly only translucent; its surface is frequently vitreous; it is perfectly hard, 4°; streak white, or slightly coloured; fracture conchoidal: when powdered and thrown on a hot coal, fluor spar exhibits a phosphorescent light, which is blue, green, purple, or brown; when thrown in mass into the fire, it decomposes. These massive varieties are never obtained, in a separate form of secondary nature; the fumes are large fibrous, or columnar, with divergent fibres: the structure of the amorphous variety is crystaline, granular, earthy, compact, and occasionally straight or curved laminae: the crystallized varieties are more common in Cornwall, and the west of England, the masses in Derbyshire and the north of England. It occurs in many places on the Continent also.

Fluor spar is, strictly speaking, to be considered as a fluoride of calcium, composed of

| One equivalent of fluorine | 18 |
| One equivalent of calcium | 20 |

**Equivalent 38**

The blue and variegated fluor spar of Derbyshire is turned into various ornamental forms, candlesticks, &c.; that of Cornwall is used as a flux in the reduction of copper ore.

**FLUORINE,** a substance which, though long known in combination with other bodies, has been only lately procured in an insulated state, if indeed as much as this can be said, and its properties in a separate state are consequently very imperfectly known. It was first obtained, or at any rate to be obtained, in a separate form by Baudrion, by passing fluoric acid over deoxidized lime, heated to redness: the gas was received in a dry vessel.
HE has since employed a mixture of sulphuric acid, peroxide of manganese, and fluoride of calcium; and although the product is mixed with hydrofluoric and fluosilicic acid gases, their presence did not prevent some of the properties of fluorine from being observed. The reason of this operation is evidently similar to that of obtaining chlorine from chloride of sodium; the calcium of the fluoride takes oxygen from the peroxide of manganese, and the fluorine is set free in the elastic state. It appears to be a gas of a yellow, or yellow-brown colour, and is more dense than a mixture of chlorine and burnt sugar, and, like chlorine, it has the power of destroying colour: it does not act upon glass.

The compounds which contain fluorine, when they do not possess acid properties, are termed fluorides; thus, as already mentioned, the fluor spar, so well known in Derbyshire, is formed chemically fluorspar of calcium. The equivalent or combining weight of fluorine is a subject on which chemists differ. Dr. Thomson makes it 18, while Berzelius considers it as only 9.37.

FLUOSILICIC ACID is prepared by mixing equal quantities of fluorite of calcium and silicic acid with three times their weight of sulphuric acid in a retort; on the application of a moderate degree of heat action takes place; and it appears that the oxygen of the silica is transferred to the calcium of the fluoride and converts it into lime, which combines with the sulphuric acid to form that of sulfuric acid, while the fluorspar and silicic acid set free combine to form fluosilicic acid, which rises in the gaseous state, and is to be received in a very dry air-jars filled with and inverted in mercury.

The gas thus obtained is colourless, its odour is peculiar, melodious, and sweet, only in their initial assertion with the moisture of the air, but much less so than fluoric acid gas. Its specific gravity, according to Dr. Davy, is 3.600, while Dumaresq makes 3.574. It suffers no change by exposure to a high temperature, and it has not been liquefied even by its condensation with any liquid, except water. The gas is very insoluble in water, of which it also decomposes a portion, and the results are hydrofluoric acid and silicic, from the union of fluoride with the hydrogen of the water, and the silicic with the oxygen.

When potassium is put into this gas, it inflames and burns at a certain temperature. When the gas is passed over iron heated to whiteness, there is formed an extremely thin coating of fluoride of iron and silicium, and the gas then passes without further alteration.

It does not decompose the alkaline carbonates when dry at any temperature; but is it is absorbed by them, however long they may remain in contact; most hydrated oxides however absorb it without the assistance of heat.

Fluoroclastic condenses double its volume of ammoniacal gas, and forms with it a volatile fluoroscite, which is a salt of the hydrofluoric and nitric acid. The colour of the oxides both are decomposed, the results being silica and metallic fluorides.

It has been mentioned that this gas is decomposed by water, the hydrofluoric acid remains in solution with a portion of the silica, while another part of it is precipitated in the state of hydrofluoric; the solution is very sour to the taste, and reddens litmus paper strongly, and decomposes alkali carbonates with effervescence. This solution has been called hydrofluoric acid.

Fluorosilicic acid is probably composed of

| One equivalent of fluoride | 18 |
| One equivalent of silicium  | 8 |
| **Equivalent**             | **26** |

FLUSHING, or VLISSINGEN, a town and fortified port on the south coast of the Island of Walcheren, in the province of Zeeland. It is situated at the north side of the Schelde, the passage of which it defends, and lies in 51° 29' N. lat., and 3° 30' 2" E. longitude, 8 miles south of Middelburg, and 17 miles north-east of Sluis. The port is formed by two mouths, which break the force of the sea, and beyond these are two canals which enter the town, in the interior of which they form two perfectly-secure basins; one of them is of considerable size, and has sufficient depth of water to receive the largest ships of war. Flushing came into possession of the French in 1795, and was much used by them as a place of rendezvous for their fleets. The batteries by which the port is defended command to a great extent the south entrance to the Schelde. The town is well built, and the population is about 6000. It was besieged in 1803 by the English expedition under Lord Chatham, well known as the Walbeereen expedition, and was taken, but evacuated very shortly after, the port and town having been much damaged by the English. Flushing has always had much notoriety as the place of resort of English smugglers and combines.

**50.1 FLUSTRA.** [CELLARIAE, vol. iv., p. 401.] FLUTE, a well-known musical instrument, the use of which, under different forms and names, may be traced to the remotest periods of antiquity. Most of the antient poets ascribe its invention to no less personages than gods and goddesses. Even the grave Plutarch, in his dialogue de Musarum, attributes it to Apollo. Lucretius, however, contented himself by deriving its origin from the breathing of western winds over certain reeds, and thus, be tells us, was suggested to man the rude pipe, a simple tube, which the ingenuity of later ages has improved into one of the most elegant and fascinating instruments that art can boast.

The word is said to be derived from the Latin Fluta (lambrijy), a kind of eel which has seven holes lengthways in its side, and when extended resembles a very narrow flute.

The antient flute had some sort of mouth-piece; it was double as well as single—that is, was often composed of two tubes, both played together, and hence it has not unreasonably been inferred that the enlightened nations of antiquit possessed some knowledge of harmony. There is a figure of an antient flute-player, or of Pan, in the Townley Gallery of the British Museum (Lib. of Entertaining Knowledge, Townley Gallery, vol. i., p. 189). The flute was almost universally employed by the Greeks, Romans, &c., for all the purposes of entertainment, and armies, but also in their funeral ceremonies. It even may be said to have accompanied their public orations, having frequently been employed for the purpose of keeping the voice up to a proper pitch. From the custom of introducing it in the last offices for the dead arose the saying, jam lice ad thibicenes mitto (you may now send for the flute-players), when any one was in articulo mortis—in the last agonies.

Of the old English flute—for the invention whereof Metisse erroneously gives this circumstance, and will say a few words. It was not uncommonly called the Flute à bec, from the resemblance of the mouth-piece to the beak of a bird. This mouth-piece was at the upper and wider end, and the instrument was held in the manner of the oboe and clarinet. It had seven finger-holes, a thumb-hole, and was commonly adapted either to the scale of C or F. The Flute à bec was gradually superseded by that now in use, which long was known as the German Flute—the Flute Transversière, or horizontal. This, at first simply in construction, lengthened in length about a foot and a half, and having only one key, has by degrees been extended to twenty-seven inches, occasionally more, and has sometimes as many as a dozen keys, seldom less than six; so that every kind of music, however chromatic, within its compass, and adapted to the scale of a tube, may now be executed on this instrument. It is formed of any kind of hard wood, of ivory, and even of glass, and is divided into four joints. The scale of the concert flute is from C below the treble staff to C in the altissimo—

\[ \text{Entering a note} \]

Some flutes are made to go four notes lower; and an adroit player can reach the E\text{\textsuperscript{b}} in altissimo—

\[ \text{Entering a note} \]
The high notes of the flute are very effective in the orchestra, but its best, its expressive tones, are those between the low G and G in all, composing twelve diatomic degrees, and the flute-like semitone. Performers on the flute, however, like those on most other instruments, now strive to attain rather than please their auditors. Tasteless, senseless execution is all-prevailing, a fact which the great majority of hearers most willingly admit, and much depends on the performer to engender the desire of one of the most delightful arts by patiently listening to, and often applauding, that which at best only excites some little wonder, never affords heart-felt pleasure, and most commonly is the source of dissatisfaction, if not of a decidedly evil effect.

The Octave flute realized also the Flauto Piccolo, Ottavino, and Hautino, in orchestral scores is a small instrument an octave higher than the common flute; it is shrill and piercing, and only desirable in the fullest instrumental parts and solo, of military bands. The best of these are marked with four keys.

**FLUTE-STOP.** On the organ, is a range of wooden pipes, tuned in unison with the dissonant, and generally proves a most successful imitation of the instrument whence its name is derived.

**FLUTE, FLUTINGS. [COLUMN.]**

**FLUX,** in chemistry and metallurgy, is any substance employed to assist the reduction of ores or metallic compounds to their metallic state. In smelting: the argillaceous iron ore of this country, which is a mixture of carbonate of iron, silica, alumina, and carbonic acid, the flux enters into the slag where certain proportions as will form a slag that melts easily, so as to allow the fused iron to sink through it. When the proportion of limestone has been properly adjusted, the slag has the appearance of green bottle-glass; when, on the other hand, the slag is opaque and blue, it is a sign that a good mixture has not been made.

When copper ores are difficult to melt, flux spars are added as a flux, which appears to promote the operation. The fluxes made use of in assaying and in chemical operations, are generally of the nature of the metal to be reduced and that of the substances combined with it.

*Assaying.*

We shall mention a few of the more important fluxes employed.

**Black flux** is made by mixing one part of powdered nitrate of silver with two parts of powdered argol, which is the commercial name for impure cream of tartar, or bitartrate of potash; this mixture is to be gradually thrown into a red-hot carbon crucible so as to deglaze it, taking care not to mix it with the crucible to fissure the latter.

In this case the nitric acid of the nitrate is decomposed, its oxygen acts upon the carbon of the tartrate acid, carbonic and acid being formed and expelled, the metal is reduced and melts. This flux is especially useful in the process of deglazing arsenical acid and reducing it to the metallic state.

**White flux** is a carbonate of potash mixed with the earthy parts of the ore, such as silica and alumina, while the charcoal unites with the oxygen of the mixture of carbones, and carbonic acid being formed and expelled, the metal is reduced and melts. This flux is especially useful in the process of deglazing arsenical acid and reducing it to the metallic state.

**Red flux** is a carbonate of potash made by deglazing equal weights of nitrate and carbonate of potash; the quantity of this last salt being smaller than that in black flux, there is no excess of charcoal furnished by tartratic acid. It appears to possess therefore no advantage over common carbonate of potash, and either of them may be employed in reducing metallic chlorides, such as that of copper, to the metallic state. White flux, or carbonate of potash, dissolves stony matter, as alumina and silica, separates acids and sulphur from metals, and dissolves many metallic oxides; having however no charcoal in its composition, it dissolves metallic chlorides, and the oxides as the black flux does.

**Argol,** already described as an impure bitartrate of potash, powdered and mixed with the pulverized substance to be reduced, is sometimes advantageously used as a flux, owing to the intimate mixture of the charcoal and potash in this flux a good deal of potassium is evolved, and upon the reducing property of this metal the reduction of the oxides of other metals frequently depends to a considerable extent.

**Charcoal alone is, in the case of pure oxides, sometimes employed as a flux;** thus a crucible lined with charcoal is useful for the reduction of oxide of iron, or the oxide may be mixed with coal, which is readily developed, but also hydrogen, which is likely to assist in the separation of the oxygen from metallic oxides.

**Flint glass** is sometimes, but improperly, used as a flux, for it contains much lead that may greatly interfere with the result.

**Green bottle-glass** has also been used for this purpose, but it is objectionable on account of its containing iron, and it even yields traces of silicium and aluminum to iron which was pure before being heated with it.

**FLUXIONS, FLUENTS, METHOD, NOTATION, AND EARLY HISTORY.** The method of fluxions assumes a distinct conception of velocity, both in the case of a uniform and variable motion. It further extends this notion of velocity or rate of increase, derived from the consideration of a moving point, to all species of magnitudes, and even to those which are not reducible to the form of the algebra.

If one magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase as a uniform and given rate, then the second will also increase or decrease, but uniformly at a certain rate, unless the second magnitude y be determined from the first x by an equation of the first degree, either

\[ y = \pm bx \pm c \]

But the rate at which y increases, though varying with the values of x, can in all cases be determined; and, supposing x to be the velocity with which x increases, and y that of y, an equation can always be produced of the form

\[ y = \frac{1}{2} ax^2 + bx + c \]

In this case y and x are called by Newton fluxions or increments, and x and y were called their fluents. Forming a function of x and y, depending on x and y, an equation which is produced

\[ y = \frac{1}{2} ax^2 + bx + c \]

when

\[ y = \frac{1}{2} ax^2 + bx + c \]

This is only the one method of finding the value of y, and all may be called the velocity of the fluxion, or the fluxes of the fluxion. Thus if x increase uniformly, the velocity of y is nothing, or (d x) = 0, but if y = ax^2 then (d y) = 2ax x. Newton denoted these second fluxions by y and x. In a similar way might be determined the velocity of y, denoted by y, and so on. We cannot find that Newton proposed any symbol for the fluent of a fluent except the expression of its expression; thus,

\[ \frac{2}{x^2} \]

is the fluent of \( \frac{2}{x^2} \).

He also, in his treatise "De Quadratura Curvarum," used z to stand for the fluent of z.

We now come to the history of this discovery, and of the dispute relative to the right of invention. We have already given a brief outline of the circumstances which led to the production of the first canon of FLUXIONS, and we shall now add the previous and subsequent occurrences, with some quotations from authorities.

The biographers of Newton state, that about the year 1663 he began to turn his attention to the writings of Descartes and Wallis, and Newton himself testifies that he invented, the method of series and fluxions in the year 1665; and that in a tract written in 1666 he had begun
to use the notation of fluxions. In 1669 Barrow communicated to Collins the tract of Newton, afterwards published under the title of De Analysi per Equationes numero termidorum infinitas, of which he afterwards says, 'I am glad my friend's paper gives you so much satisfaction: his name is Mr. Newton, a fellow of our college, and very young (being but the second year of his 21st year), but of such extraordinary proficiency in these things, as in the ordinary generality of men I never met with.' This tract contains a method of series, and many problems solved by application of limits to differences obtained by expansion; but no direct method of fluxions. It was first published in the Commercium Epistolicum. Various letters followed, and others to the beginning of 1676, state that the first-named had invented a method by which tangents could be drawn, &c., without the necessity of freeing their equations from irrational terms. Among them is a letter of Newton to Collins, dated December 10, 1672, in which he states the fact of his discovery, with one example. This letter the committee (COMMERCII EPISTOLICUM) assert to have been sent to Leibnitz, but without proof. Leibnitz desired to have this method communicated to him; and Newton, at the request of Oldenburg and Collins, wrote to the former the celebrated letters of June 13 and October 24, 1676. In the first he states the binomial theorem, and various consequences of it in combination with his method, but without giving any information as to that method. Leibnitz in a reply, also addressed to Leibnitz, went on to show what Newton had sent, and requests further explanation. Newton, in the second letter just mentioned, then explained how he arrived at the binomial theorem [BINOMIAL THEOREM], and gives various results of his method. He also communicated his method, as it was then understood, (as it was often practised at the time), if cipher it could be called, which had no method by which it could be deciphered. It consisted in placing in alphabetical order all the letters in the sentence communicated. Thus Newton gave to Oldenburg that his method of drawing tangents was

\[ \text{saece} \text{ ORDER} 13 \text{EFF} 71 \text{IT} 3 \text{NO} 4 \text{ACR} 48 \text{EST} 12 \text{EX}. \]

or, that if any one could arrange six as, two ec, one d, &c., into a certain sentence, he would see the method. That sentence, containing the involved fluxions invensorum, et vice versa. If Leibnitz could have taken a hint either from the preceding letters or from the method, he would have desisted from his studies, and would have devoted much credit to Wallis, the inventor of the method.

We cannot find anything in the rest of the letter which could give any such hint; and certainly Newton, who showed himself desirous to conceal the method, and knew that his letter was to come under the acute eye of Leibnitz, did not undertake to make known the method to Leibnitz in this letter. This letter, of October 24, 1676, had not been sent to Leibnitz, March 5, 1677, as Collins informs Newton by letter of that date. So early as June 21, of the same year, however, Leibnitz had received that letter and written an answer to Collins, in which, without any desire of concealment, he explains the principle, notation, and use of his differential calculus: this letter was published in the 'Commercium Epistolicum.' It is of this correspondence that Newton wrote the celebrated scholium; of which, as we shall see, he was so much pleased, that he had it printed in Latin, which was evident from it. It was evident from the third edition of the 'Principia.' This scholium, very literally translated, is as follows (book ii. prop. 7, scholium). A.D. 1687. 'In letters which went between me and that most excellent mathematician, G. G. Leibnitz, ten years ago, when I signified that I was in the knowledge of a method of determining maxima and minima, of drawing tangents, and the like, and when I concealed it in transposed letters involving this sentence (Data equations, &c., above cited), the idea appeared to Mr. Newton, the introducer of the method, to have been fallen upon a method of the same kind, and communicated his method, which hardly differed from mine, except in his forms of words and symbols.'

It will be convenient here to give Newton's subsequent exposition of fluxions. In 1687 he published marks on Leibnitz's letter to Conti of April 5, 1676, published in 1716 in the appendix to Raphson's 'History of Fluxions.' He pretends that in my book of principles I allowed him the invention of the calculus differentialis, independently of my own; and that to attribute this invention to myself is contrary to my knowledge there avowed. But in the third paragraph of this letter, he does not find one word referable to this purpose. On the contrary, I therefore infer from what he sent notice of my method to Mr. Leibnitz before he sent notice of his method to me: and left him to make it appear that he had found his method before the date of my letter; which is, in reality, the least before the date of his own. And, by referring to the letters of Newton and Leibnitz, Mr. Leibnitz and me ten years before, I left the reader to consult those letters and interpret the paragraph thereby. For by those letters he would see that I wrote a tract on that method and the method of series together, five years before the writing of these letters; that is, in the year 1671. And these hints were as much as was proper in that short paragraph, it being besides the design of that book to enter into disputes about these matters.'

Nothing material passed till 1669, in which year Leibnitz gave his first paper on the Differential Calculus in the Leipsic Acts. In 1687 the Principia was published by Newton; and Leibnitz continued to give papers on the subject of his new Calculus. The Bernoullis began to cultivate the subject about the year 1691, and as they were on terms of correspondence with Leibnitz, they drew, and to which they returned, additional ideas on the subject. The Marquis De L'Hôpital was employed in writing his elementary treatise (the first written), which was published in 1696. All these considered Leibnitz as their chief; and Newton wrote in 1699, by letter of April 10, 1695, that 'he had heard that his notions of fluxions passed in Holland with great applause by the name of Leibnitz's Calculus Differentialis.' Accordingly Wallis, who had just completed printing the first volume of his works (the third, which contains Leibnitz's letters to Oldenburg, having been previously printed) inserted in the preface, as a reason for not mentioning the Differential Calculus, that it was Newton's method of fluxions which had been communicated to Leibnitz in the Oldenburg Letters. Newton, in the preface to the 'Acta Eruditorum, or Leipsic Acts,' for 1699, reminds the reader of Newton's own admission above cited. On this Newton (Raphson, supplement above cited) remarks, 'Whether Mr. Leibnitz invented it after me, or had it from me, is a question of no consequence, for second inventors have no right.'

In 1699 Patro de Duillier, a Genevese, settled in England, stated in a mathematical work his conviction that Newton was the first inventor, adding that he left it to Wallis to publish the manuscript; which, he said, Newton himself after the tradition of the Principia had sent to Wallis. This was the first distinct suspicion of plagiarism; and Leibnitz, who had never contended the priority of Newton's discovery, and who appeared to be quite satisfied by Newton's admission, now appears, for the first time, in the controversy. In a reply to Duillier (Leipsic Acts, 1700) after calling attention to Newton's scholium, he declares that when he published his method, in 1664, he knew nothing more of any method of Newton, except that the latter had written to him that he had begun to think of the subject, and that he received from that method, although on the publication of the Principia he became aware how much further its author had pushed his discoveries, he did not know that Newton possessed a Calculus (or organized method) like the Differential, till the publication of the 'Principia.'

The 'Quadrate of Curves' was published by Newton in 1704 at the end of his Optics. It contains a formal exposition (the first published) of the method and notation of fluxions. Since so great a stress was laid by the parties to the quarrel upon the specific notation of fluxions, it was the most ungenerous of all Newton himself did not very soon adopt such a course. He says that in 1666 he sometimes used a letter with one prick for quantities involving first fluxions; and the same quantity with two pricks for quantities involving second fluxions. Whether he ever published these marks on Leibnitz's letter to Conti of April 5, 1676, published in 1716 in the appendix to Raphson's 'History of Fluxions.' He must have known by Collins's letter that it was not three. They had not then been published.
notion that he had not seen the letter of Leibnitz referred to in the scholium. A review of the above work appeared in the *Leipzig Arts,* January 1765, in which, after stating that the *Dissertatio* had been suppressed, it was said that what was published was only an abridgment of the whole by Leibnitz, its inventor, and further by the Bernoullis and Dr. Leibnitz, the author proceeds as follows: 'Instead of the Leibnitzian differences Newton applies and always has applied (albeit semperque abhinc) fluxions, which are ground not as the increments of flowing quantities generated in infinitely small times, and has used them with elegance both in his Principia and in subsequent writings, just as (quemadmodum et) Fabri in his synopsis has sub-

stituted (substitutus) motion for the method of Cavalieri.' This was confirmed by Newton's friends as an imputation of plagiarism on their chief; but such a construction was always strenuously resisted by Leibnitz. On the one hand it was declared that Newton was represented in the same light with regard to Leibnitz as Fabri to Cavalieri, by the face of *quomodo et* on the other it was replied that the distinction between separate invention and borrowing was preserved in *adhibuit* and *substitutus.* We are inclined to suspect that the meaning of the writer was not very clear. Be this as it may, the preceding sentence calls forth the assertion of Keill (Phil. Trans. 1715), that Leibnitz had inserted Newton's method, changing its name and notation, in the *Leipzig Arts.* The article *Commercium Epistolicum* takes up the history at this point. The *Commercium Epistolicum* (which was not published for a long time) has been described as having been composed in 1715, but it does not reach Leibnitz, who was at Vienna, for a considerable time. In the mean while he wrote to John Bernoulli (who had received his copy) for his opinion of the work. This the latter gave, first in a letter to Leibnitz, and after-

wise in another (in an antithesis) in his *Johanni Leibniz,* in July 1725. But, as in that tract the author speaks in complimentary terms of John Bernoulli, it has been supposed that at least it was edited by some one else. This letter is decidedly as unfair towards Newton as the friends of Leibnitz. A second letter was sent, containing the method of fluxions to be a plagiarism from the Differential Calculus. Keill printed a reply, and Newton and Leibnitz then appear as mutual accusers in letters to Mr. Chamberlayne. Nothing remarkable arose out of this correspondence, which terminated in the announcement of Leibnitz that he also would prepare a *Commercium Epistolicum.* About December, 1715, Leibnitz re-opened the matter in a letter to the Abbé Antonio Conti of Venice, then on a visit to England. He had complaints of the treatment he had received, and now looking to the philosopher's friendship for his future advancement, wrote a reply, February 26, 1715-16, in which he very much dwells on previous admissions made by Leibnitz. The latter, in a third letter to Conti, April 9, 1716, avows that he always believed Newton upon his word, but that, seeing him continu a neglectful philosopher, he was forced to believe it was natural that he (Leibnitz) should begin to doubt. Newton is also reminded that he had made some admissions in favour of Leibnitz (in the scholium) which he was now desires of disavowing. This letter was not sent directly to Conti, but first to Paris, where it might be there seen and copied by a friend; on which Newton refused to send any answer, considering it as an insult that Leibnitz, though he complained of suppressions in the *Commercium Epistolicum,* should take means to preserve evidence to the whole of the Newtonian philosophy. There is a correspondence among his friends, which he published immediately on hearing of the death of Leibnitz, November 14, 1716. It is in this last paper that the remarkable sentence occurs which we have quoted above in connexion with the scholium which it destroys. Rapin's *History of Fluxions* being then ready for publication its title-page bears 1719, or possibly 1718, published, the Conti correspondence was annexed as a supplement.

The hist of the controversy ends with the death of Leibnitz. Let us conclude this article with a few additional quotations and facts, which have hitherto been unmentioned. 1. The second letter of Keill (May 24, 1711), *Com-

mercium Epistolicum* on which the whole of the subsequent dispute arose, was in the substance of the statement of Newton in the minutes of the Royal Society, April 5, 1711, it is stated that the president gave a short account of the matter, with the particular time of his first mentioning or discovering his invention, referring to some letters published by Dr. Wallis: upon which Mr. Keill was
drawn up an account of the matter in dispute, and set it in a just light.' The letter in question was the consequence, which was read at the meeting of the 12th of May 1711.

2. The committee consisted of Dr. Arbuthnot, Mr. Hill, Dr. Halley, Mr. Jones, Mr. Machin, and Mr. Burnet. This is what Newton calls 'a numerous committee of gentlemen of several nations.' The names of the committee were not published in the *Commercium Epistolicum.*

3. So far from the committee considering themselves as in any judicial capacity, it appears, from a letter of Burnet above-man to John Bernoulli (which the latter sent to Leibnitz, and the extract is in the published correspondence of the two, that the Royal Society was busy promoting. The original letters that Leibnitz might have seen the method of fluxions in the correspondence of Oldenburg, &c.

There was throughout the whole dispute a confusion between the knowledge of fluxions or differential calculus and that of *calcus of fluxions or differential,* that is, a digested method with general rules. If the dispute could be revived at the present time, it would be on entirely different grounds: but of course, in describing the controversy as it existed, we need only consider those points which were put in issue by the parties themselves.

**FLY**

**FLY-WHEEL.** **(Wheels.)**

**FLYING-FISH.** Under the head *Dactyloptera* there is an account of certain flying fishes belonging to the order Acantthopterygii: there are however others, of a different nature, by which the air is sustained rather than with the power of sustaining themselves in the air for a certain length of time—we allude to the species of the genus *Exoristes.*

The genus *Exoristes* belongs to the Abdominal Malacop-

tergata, or group, of the family Esoxidae. The distinguishing characters are:—pectoral fins nearly equal to the body in length; head flattened above and on the sides; the lower part of the body furnished with a longitudinal series of ciliated scales on each side; dorsal fin placed above the anal; eyes large; jaws furnished with small pointed teeth.

The flying fishes when in their own element are con-

stantly harassed by various fishes of prey, and it is supposed that their flights are performed for the purpose of escaping these. In a small pond they are subject to the attacks of various species of gulls.

Whether these fishes possess the power of flying, in the true sense of the term—that is, by beating the air with their members, or whether their large fins merely serve as air-sails and give them the necessary momentum to leap from the water, is not yet fully ascertained; observers having given different accounts. The latter is perhaps the prevailing opinion of naturalists, and is that of the more recent observers. 'I have never,' observes Mr. George Blummet, the author of 'Wanderings in New South Wales,' been able to see any percussion of the pectoral fins during flight, and the greatest length of time that I have seen this *robust* fish on the *fin* has been thirty seconds by the watch, and their longest flight mentioned by Captain Hall has been as long as seventy seconds. A 'wind' when they are seen some distance from shore will extend the space. The most usual height of flight, as seen above the surface of the water, is from two to three feet; but I have known them come on board at a height of 14 feet and upwards; and they have been well ascertained to come from elevations of as much as 50 feet which is considered as being 20 feet and upwards.' But it must not be supposed they have the power of elevating themselves in the air after having left their native element; for, on watch-

ing them, I have often seen them fall much below the elevation at which they first rose from the water, but not in the same instance as they would appear to have come from a height at which they first sprang; for I regard the elevation they take to depend on the power of the first spring or leap they make on leaving their native element.

Judging from the foregoing quotation, and several other accounts which we have perused, it would appear that something beyond the mere leap of the fish would be required account for the great heights (of 14 or 20 feet) at which
FOCIUS (Optics), the point at or near which rays are collected by a lens or mirror. Its distance from the lens or mirror is called the focal length. [LENS; MIRROR.]

FOCICUS (Anatomy).—A genus of mollusks. 

FOCICUS, a genus of mollusks established by D'Orbigny, and generally considered as the end of the Suborder Anisiscidae, and next to his Rapipallaria; nor is it better known than the last-named genus.

Genera Character.—Animal oval, mammillated, divided throughout its length by a vertical partition which contains the stomach, into two unequal tubes, opening at each ex-
the ovary, and is conveyed through the Fallopian tube to the uterus, but it has not been exactly determined how soon it arrives there. It is supposed that in the 8th, or 9th week of gestation, an opening is made in the mesonephros when he supposed that only eight days had elapsed since impregnation; but other accurate investigations have failed in finding any ovum, though it was probable that nearly a month had intervened between impregnation and death.

Then at any rate it is possible to embryo visible to the naked eye; in fact, it may be considered as now proved by the labours of Wolff and other physiologists, that the organs of the fetus are successively formed in the ovum, and not evolved, according to our old idea of the budding or growth from pustules existing in the embryo. The ovum grows rapidly after reaching the uterus; it first consists of two sacs, one enclosing the other, and the latter containing a liquid. When it is about half a line in diameter, a new element becomes visible in it; a nodal, opaque, germinal membrane is seen, with a dark spot in its centre, upon the surface of the internal globule or sac. This spot, which is seen either on or through the inner membrane of the ovum, corresponds with the vitellaria of the egg, and is the first rudiment of the fetus.

In birds the vitellaria or germ spot lies upon the surface of the yolk; soon after the commencement of incubation it expands and separates into two layers: the outer is called by Pander the surface layer, and subsequently forms the vesicles, nervous, muscular, and connective systems of the body; the inner, which is covered with the yolk, is called the embryo, and with that the yolk contracts into an oblong canal, which extends the whole length of the embryo, and becomes the future alimentary tube. The sac containing the yolk, and communicating with the intestines, is called the intra-embryonic, or yolk-sac, and towards the close of incubation is drawn into the belly of the chick, and its contents are used as nourishment. The lower end of the alimentary canal (the cloaca of birds) opens out into a sac which is termed the allantois or allantoid membrane. After a time the walls of the cloaca thicken, and protrude more and more out of the body of the chick, till at length it forms a double bag, laid immediately under the membrane of the shell. On this sac the blood-vessels are so distributed that their contents are influenced by the ovum before it is hatched, and the contents of the allantois, and thus a true respiratory organ is established.

The original structure of the ovum, and the early development of the embryo in mammalia, appear to be much the same as in the egg of a bird; though there are some circumstances by which the two animals are distinguished. When the full magnification of the ovum is examined, the embryo is seen suspended in a loose bag filled with fluid, called the amniotic sac, which is a shell sac; this sac is the outermost product of the zonic layer of the germinal membrane; for its formation a membrane is reflected from the shows and extrenuous parts of the embryo, (the reflection, according to Velpeau, not commencing before the twelfth day,) so as to enclose a space behind it. As the walls of the trunk close in front, the circle at which the amnion is attached to the body of the embryo gradually contracts, and it is limited by a thick edge of the peritoneal line of the umbilical opening; it then invades the umbilical cord, and spreads out from its placental extremity into an ample sac filled with fluid, in which the foetus floats. The inner layer of the germinal membrane in mammalia is supposed from analogy to form a sac, as in birds, containing a yolk, or substance subservient to the nourishment of the foetus in its early stage. Whether this view of its formation and use be correct or not only rest on analogy; but in the early part of gestation a small sac or bladder, from which its contents do not flow out, is generally to be seen in the umbilical canal, called so early (Velpeau says in the sixth week of gestation) that its communication with the intestines was long undetected, though the sac was known to the older anatomists. The intestinal vesicle finally differs in mammalia and birds in this circumstance, that in the former it is not drawn into the body of the fetus, but remains without being incorporated into the body until the second month. In some animals, as in man, it becomes obliterated at a very early period, as soon as the sixth week, but in others, as the carnivora, &c., it attains a large size, and continues during the whole period of fetal existence. In mammalia it communicates with the fundus of the bladder, and the remains of the duct by which it is connected is denominated the urachus. The channel of communication between the bladder and the urachus, when called the urachus, is formed with the saccus, till it shrinks to the exterior of the uterus, and this is connected with the other portion called the urachus vera, lining the walls of the uterus.

The position of the embryo is reflected upon the ovum in which the placenta is fixed to the uterus. The ovum has two proper membranes, the amnion, which have described, internally, and an outer membrane, which is called the chorion; the latter membrane in man, in the first two months of pregnancy, has a shaggy external surface, being made up of! processes, which in the ninth month are called the chorion frondosum, and is thick and vascular. The thickening of the chorion, and the diameter of both these membranes gradually diminishes, and becomes concentrated on one part, usually towards the funiculus of the uterus; this thickened portion is termed the umbilical placenta, and is reflected on the umbilico-vascular surface of the chorion, is confluent to a number of circular and spongy elevations varying in number from thirty to one hundred, which are called cotyledons. These vascular processes dip into the corresponding processes of the other part of the umbilical placenta, and are called maternal cotyledons, the surface of which is supplied with numerous vessels derived from the uterine arteries and veins. The result of this arrangement is that a large vascular surface of the maternal system is applied to an equal surface of the foetal system. To this direct communication between the arteries and veins, we must suppose that nourishment is imbied from the vessels of the mother by those of the fetus through the fine intercommunicating membranes by which they are separated. In man the relation between the maternal and fetal systems is not so clearly understood as in the preceding instance. In the human subject the placenta is a spongy vascular mass like a cake; fine in six to eight inches in diameter, about an inch thick in the middle, and two or three lines at the circumference; it is attached to the anterior diameter of the lower uterine segment; it is termed the umbilical placenta, and is connected with the uterus by blood-vessels. The fetal surface is covered by the chorion and amnion, and presents a ramifications of the umbilical vessels, which consist of two arteries and a vein. The ramifications of these vessels communicate with each other, but no communication has ever been shown to exist between them and the utero-placental vessels; for if we inject from the umbilical arteries we find that the injected blood is carried out by the foetal vessels which are filled in every part of it, but between their ramifications there will remain an uninjected substance, and the uterine vessels do not pass all the way to the surface. In like manner, if the vein is injected we find that the injected blood passed through the placenta to the foetal vessels, but that none passes into the maternal vessels. From this circumstance it is concluded that the placenta consists uniformly of two portions: the one is furnished by the deciduous coat of the uterus, the other by the vessels of
the chorion, and these two portions may, during the first three months, be separated from each other by acereration. The structure of the fetal portion, so far as can be made out, appears to be similar to that of the pulmonary vessels, the artery terminating in the vein. But the maternal portion comes from the child through direct commu-
nication, but the arteries, as Mr. Hunter thought, seem to terminate in irregular cells, and the veins appear to commence with open mouths from these cells, for by throwing wax into the uterine arteries we fill the cells, and fre-
quently see on the background a very light, almost this very obscure subject. With regard to the size of the placenta we may infer that it is very similar in man to what it is in ruminating and other animals; it most probably serves to produce a change in the blood of the fetus analogous to that which the blood of the adult undergoes in the lungs; and, from considering that the fetus itself cannot create materials for its own growth and support, we may further infer that the placenta is the source of nutrition also.

The navel-string, or umbilical cord, which connects the child to the mother, is composed of the umbilical vein and two umbilical arteries twisted together, and surrounded by a gelatinous substance and the reflections of the chorion and amnion: it also contains the uracus, and the remains of the duct of the vesicles alba and omphalo-mesentric vessels. There is a small vein, which is propelling the blood from the heart through the amnion, from which there is no use for it present in the lungs, it nearly all passes through a vessel named the ductus arteriosus into the aorta. This duct also becomes obliterated after birth, its func-
tions having ceased when once the child has breathed.

By the aorta the first free circulation begins, between the heart and ductus arteriosus to the different parts of the body, from which it is returned by the veins, but a great part of it passes out of the body of the fetus by the umbilical arteries which are continued from the internal iliacs, to the parts to which the external communications which the blood of the fetus differs in its physical and chemical qualities from that of the adult. There is before birth no distinc-
tion between arterial and venous blood; it is of a dark colour in both systems of vessels. The purified blood is brought from the placenta by the umbilical vein, and is mixed before arriving at the heart with that which has been circulating through the fetus: the mixed blood is then transmitted by the aorta to various parts of the body; some of it only going again to the placenta by the umbil-
ical vein and intestine. The position of the child in the uterus is that which takes up the least room; it lies with the head downwards, the chin being bent on the breast; the knees are doubled up close to the belly; and the arms are folded in the space between the head and legs. This is the most general posi-
tion, and the child thus forms an oval figure, of which the head forms one end and the breech the other. The long axis of this ellipse measures in the ninth month fully ten inches, and the short one five or six. The quantity of fluid which surrounds the child at the full time is, on an average, about two pints. The ordinary period of utero-gestation in man is forty weeks, though labour often takes place before this period, or is delayed a little beyond it. The embryo having now reached the full length of its growth, the child is ready for birth. The child is now separated from the uterus by the fibres of the uterine contract, accompanied by con-
traction of the abdominal muscles and diaphragm. In conse-
quently of this pressure the membranes gradually dilate the mouth of the womb; they then burst and eva-
late with the parturient fluid; then the placenta and the child itself, which is gradually forced into the world and com-
ences a new existence. In man, and other mam-
als, the young being for a considerable time depends upon its mother for the whole of its nourishment, and very generally requires of warm and a degree of pro-
tection till it is able to provide for itself.

FETUS (in Botany). The fetus of plants is what bot-
antists term the embryo; a firm, cellular, more or less cyl-
drical body, either divided into two or more lobes or cotyle-
dons, or having but one cotyledon rolled upon itself, and usu-
ally with its margins so united that it appears extremely

The fetus has many peculiarities which distinguish it from other organisms; in particular its mode of life, and are lost immediately after being expelled from the mother, or are gradually removed during gestation. The most characteristic difference is that it lives in a medium of water, and not of air, and consequently does not breath through lungs, but has its pulmonary system arteriated by circu-

The umbilical vein carries the blood from the placenta to the fetus: it enters the liver by the longitudinal fissure, and in the transverse fissure communicat-

The blood by the vena cava inferior to the right auricle is transferred into the right ventricle, the blood is drawn into the ductus arteriosus, from which it is transferred into the aorta.

When this occurs the umbilical arteries and the ductus arteriosus go immedi-
ately into the left auricle through an opening in the septum of the auricles, the foramen ovalis, which closes up immediately after birth. The blood that still goes into the right ventricle through the auriculo-ventricular orifice becomes transformed into plasma, because it is still not passing through the liver, and there is no use for it present in the lungs, it nearly all passes through a vessel named the ductus arteriosus into the aorta. This duct also becomes obliterated after birth, its func-
tions having ceased when once the child has breathed.

By the aorta the first free circulation begins, between the heart and ductus arteriosus to the different parts of the body, from which it is returned by the veins, but a great part of it passes out of the body of the fetus by the umbilical arteries which are continued from the internal iliacs, to the parts to which the external communications which the blood of the fetus differs in its physical and chemical qualities from that of the adult. There is before birth no distinc-
tion between arterial and venous blood; it is of a dark colour in both systems of vessels. The purified blood is brought from the placenta by the umbilical vein, and is mixed before arriving at the heart with that which has been circulating through the fetus: the mixed blood is then transmitted by the aorta to various parts of the body; some of it only going again to the placenta by the umbil-
ical vein and intestine. The position of the child in the uterus is that which takes up the least room; it lies with the head downwards, the chin being bent on the breast; the knees are doubled up close to the belly; and the arms are folded in the space between the head and legs. This is the most general posi-
tion, and the child thus forms an oval figure, of which the head forms one end and the breech the other. The long axis of this ellipse measures in the ninth month fully ten inches, and the short one five or six. The quantity of fluid which surrounds the child at the full time is, on an average, about two pints. The ordinary period of utero-gestation in man is forty weeks, though labour often takes place before this period, or is delayed a little beyond it. The embryo having now reached the full length of its growth, the child is ready for birth. The child is now separated from the uterus by the fibres of the uterine contract, accompanied by con-
traction of the abdominal muscles and diaphragm. In conse-
quently of this pressure the membranes gradually dilate the mouth of the womb; they then burst and eva-
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dons, or having but one cotyledon rolled upon itself, and usu-
ally with its margins so united that it appears extremely
like a solid cylinder. The cotyledons are placed upon a small body, which may be compared to two cones with their bases applied to each other and connected together at the apex, pointing in opposite directions, and which separates them in a slight degree when there are two or more cotyledons. That cone which points towards the apex of the cotyledon is the \textit{funiculus}, and the other the \textit{radicle}. Of these parts, the cotyledons are rudimentary leaves, and that double curving, the plumele, giving birth to the stem and the radicle to the roots.

The embryo rarely, if ever, exhibits any distinct traces of either vascular or woody tissue until the commencement of germination, but as soon as the phenomenon takes place both are rapidly developed in abundance.

The embryo of a plant is developed in the nucleus of the ovule [Ovula], and always first appears in that part of the nucleus which is next the funiculus. It is first seen as a whitish semi-transparent globule, which after this gradually surrounds the embryo and the cotyledon or cotyledons downwards into the mucilage which, at that time, fills the cavity of the ovule; eventually absorbing all the mucilage, when it occupies the whole interior of the seed, or at least a portion of it, in which case it is associated with albumen. When it first appears it does not lie loose in this mucilage or water of development, but it adheres to a cellular sord which is attached by one end to the chalaza, and by the other to the summit of the nucleus where the embryo first appears. When the funiculus is dissolved by the mucus of the embryo is matured, but in many plants, Nymphaea, and Cerus, for instance, it remains visible in the seed as a long twisted irregular thread, from which the embryo is bound to hang when it is taken out of the seed. (Treviranus, \textit{Symbola Phytologiae}, t. i.; and \textit{Miscellaneous}.)

FOGGIA, the chief town of the province of Capitanata, in the kingdom of Naples, situated in the midst of a vast and perfectly level plain, which extends from the foot of the Apennines to the Adriatic, is the residence of the bishop, and the seat of the original court of the province. For civil suits Capitanata is subject to the Gran Corte Civile of Naples. The Royal Lyceum of the province is at Lecce; but there is at Foggia a secondary or grammar-school as well as elementary schools, and also a school of agriculture and philosophy.

The Tribunal of Commerce for the provinces of Apulia was established here in 1818. Foggia is a modern-looking, regularly-built town with wide streets, some fine buildings, and 21,000 inhabitants. It carries on a great trade in grain, wool, and cattle, the staple produce of the province, and about 56,000 bushels of grain is sold and 44,000 bushels bought in this town. A great fair is held here in the month of May. Foggia is chiefly a place of trade, being the great inland market for the agricultural produce of Apulia, and is also the residence of the provincial bishop and lord of the castle, who are wealthy people.

The climate is not wholesome in the summer months, and the night air especially is considered unhealthy. Foggia is reckoned, for its importance and wealth, the second town in the kingdom of Naples. It stands on the high road from the capital to the eastern provinces, 75 miles north-east of Naples, 24 south-west of Manfredonia, and 77 miles west by north of Bari. The neighbourhood of Foggia being planted with olive, mulberry, vine, and other fruit-trees, looks like an oasis in the vast naked and solitary plain of the Tarantula. (\textit{Capitanata}.) A large tract of Foggia is remarkable for its meadows which grow in great quantity in the neighbouring country.

FOIL, in Gilding. \textit{Gilding.}

FOIX, the name of a town and former county of France.

The town of Foix is the capital of the department of Ariege, and is situated on the left bank of the river which gives name to the department. It is among the Pyrenees, but many miles from the line of the highest elevation, about 40 miles in a straight line south-west by West of Paris. It is in 42° 58' N. lat., and 1° 59' E. long.

The name is derived from the foundation of this town by the Phoencians of Masilia (Marseille), and attributes to it the name of Phoeni; but this tradition does not seem to be supported by anything, unless it be the modern name of the town.

Foix seems rather to have owed its original to an ancient residence of the counts of Foix, and to an ancient abbey, founded by the counts of Carcassonne, and endowed by the counts of Foix, with additional possessions. The streets of the town are narrow; but there is a good though antique stone bridge over the Ariège; and the remains of the castle, consisting of three detached Gothic towers, on a height commanding the town, are yet preserved from decay.

The population of the town in 1832 was 3225, that of the commune 4857. The inhabitants are industrious, but the secluded situation of the place restricts its commerce: coarse cloth, seric, hats, and bosseware are manufactured, and trade is transacted in the direction of wool and woolen cloth. There are some coal-pits; and on the banks of the river are several forges.

Foix has a subordinate court of justice and several government-offices, an exchange, a high-school, a library, a theatre, and a society of agriculture and the arts. This town has no communication but posting with the capital: the line of post coaches at Toulouse, about 50 miles from Foix; and, although there are in this part fourteen passes or defiles of the Pyrenees communicating with Spain, none of them are practicable for carriages.

The territory known as the county of Foix was formerly part of the territory of the Vexin, and, perhaps, of the Consarines who inhabited the Pyrenees. It was afterwards part of the territory of the counts of Carcassonne, who were in feudal subjection to the counts of Toulouse, but upon the death of Roger I., count of Carcaonne, who divided his estates between his family, it became, about the beginning of the eleventh century, a separate jurisdiction, which fell to Bernad, second surviving son of Roger. This Bernad founded the town of Foix in the name of St. Louis of France. The counts made a conspicuous figure in the civil and religious discussions of the middle ages; Raymond Roger (a.d. 1188-1223) and Roger Bernard le Grand (a.d. 1223-1241) supported the counts of Toulouse against the counts of Bar. Guy Roger Sunifer supported the counts of Foix to the death of the last of the line of Foix, and the possession of the royal house of Navarre, fell to the crown of France upon the accession of Henri IV., a.d. 1589.

The county of Foix was small: its greatest extent was from north-west by south-east by about 50 miles; its greatest breadth about 15 miles, and it extended along the river Ariège, from the county of Languedoc, to the west by the district of Causse, and on the south by the estrees of the Pyrenees, by which it was separated from the districts of Cerdaigné and Rossillon. The territory thus described is watered by the river Ariège, which is navigable to Foix, the capital, for nearly its whole length. It was subdivided into La Haute Parcie (the upper district), La Basse Parcie (the lower district), and Le Donzecan. The chief towns were Foix, Pamiers (population in 1832, 5150 for the town, or 6045 for the whole commune), La Bastide de Seron (pop. 1692 for the town, or 2914 for the whole commune), Mazères (pop. 2327 for the town, 3176 for the commune, Saurat (pop. 2563 for the town, 5014 for the commune), Saverdun (pop. 1897 for the town, 3127 for the commune), Ax or Aig, Tarasson, and Lagasca.

The present arrondissement of Foix comprehends eight cantons, and 140 communes; it had, in 1832, 89,892 inhabitants.

FOIX (GASTON III. COUNT DE). Viscount de Foix, was born in 1311. He was the son of Gaston II, by Eleanor, daughter of Bernard V. Count de Cominges. From his personal beauty, or his fondness for the chase, he was called Phoebus, on which account, agreeably to the fashion of his day, he took the sun for a device. His father died when he was twelve years of age; and the guardianship of his mother. In 1335 he made his first essay in arms against the English in Guienne, and served afterwards in Languedoc, where, and in Gascony, he subsequently became the king's lieutenant. In 1349 he was appointed to the district of Foix. In 1356, being suspected of holding criminal intelligence with his brother-in-law Charles the Bad, he was arrested by order of King John, and sent to the prison of the Châtlet, at Paris; but, being released soon afterwards, he went
to Prussia to serve against the infidels. In 1359, during the revolt called the Jacquerie, he aided in the rescue of the Duke of Burgundy, whom he had assumed the leadership of at the market-place of Mousca, and in the same year made war upon the vicomte of Béarn, whom he afterwards took prisoner, in 1372, at the battle of Laon. Gaston, who had been betrothed his wife, the dauphine, for about her dowry, parted from her in 1373. In 1380, the government of Languedoc becoming vacant by the recall of the duke of Anjou, it was bestowed by Charles V. on the Count de Foix. He held it however but a few months. Charles V. dying on April sth that year, Charles VI. revoked the appointment, and gave it to the duke of Berri. The Count de Foix appealed to arms, and finally yielded up the government only on negotiation. By his marriage the Count de Foix had but one son. This youth, in 1392, was present among his attendants, who had returned from war, of his brother, Charles the Bad, received from that king (to whom crime was familiar) what he pretended was a bag of love-powder, which that king told him to conceal, at the same time informing him that the sprinkling of a small quantity of it upon any food his father might eat, would have the effect of reconciling the count to his wife. The powder turned out to be a strong poison, and Gaston ordered his son to be arrested. The young prince, deceived but not guilty, refused all nourishment, and died in his prison; the 'Folard's' were published in various editions, for the benefit, it is supposed, of the king of France. When going to remonstrate with him, by accidentally striking the point of a knife into his son's throat as he pushed aside the tapestry which covered the entrance to his dungeon. In 1390 Gaston received Charles VI. and his whole court at the Château de Foix, at which time, as he had reported to his sister, she not only entertained them with great magnificence, but made the king the heir to his domains. He died of apoplexy in the beginning of August, 1391, as his attendants were pouring water on his hands at his return from a hunting party.

Historians, especially Frossart, have painted Gaston as an accomplished, brave, affable, and magnificence prince: they cannot however deny that he was violent to excess. His conduct toward his son, and to De Berne, the governor of the place, was not calculated to win him the place to the French, and whom, on his refusal, he struck several times with his poniard, are incontestable proofs. His favourite passion was hunting. He carried it to such extreme, if we may believe Saint-Yon, he did not even wait for the scent, but set out himself in search of what he desired, and then probed a work on what constituted the object of his aisation, entitled 'Phèbus des dedeute de la Chaste des Saintes sauvages et des Oyseaux de proye, three or four editions of which are known; viz. fol. Par. by Verard, without date; another of various times and places with various errors, in 1515 and 1520. The book of 'Phèbus' is also included in several of the early editions of the 'Treatise on Hunting' by Jacques de Foulhoux. (l'Art de végirl' les Daies, fol. Par. 1744, tom. ii. pp. 312, 313. Biog. Universelle. tom. xv. p. 131; Goujet, Bibliothèque Françoise, tom. ix. p. 114.) It was in the castle of Orthas, Gaston's principal residence, that Frosart, who staid there a considerable time, heard many of the best stories with which his history is embellished. The portrait which he has drawn of Gaston is one of the finest pictures of what a chivalrous prince was in the time of our Edward the Third.

FOKIAN. [China, p. 80.]

FOKSHAM. [WALLACHIA.]

FOLA, JOHN CHARLES DE, was born at Avignon, in 1727, and educated early into the law, and distinguished himself by the attention which he paid to the scientific part of his profession, to the movements and manoeuvres of an army in the field: he drew plans and maps, and became a pretty good engineer. Having been made a chevalier of the Order of St. John, he attended him in his Italian campaigns, and was wounded at the battle of Cassano. He afterwards served in Flanders under the duke of Bourgogne, and was wounded again at the battle of Malplaquet. His real, at times indiscreet, his opinions, were not in accordance with his official duty, and his advice, which, although at times valuable, was not acceptable to his superiors, made him many enemies. The peace of 1712 having placed him on the reduced list, he repaired to Malta to offer his services to the order of St. John, which was then threatened by the Turks; but being offended at some real or supposed slight, he returned to the continent, and visited Sweden, where he was well received by Charles XII., who employed him on some missions, and whom he accompanied to the battle of Parnawa, in 1715. After Charles's death in the trenches of Freidricheshall, Foland returned to France, and made one short campaign more in the war against Spain of 1719, after which he withdrew into private life, and occupied himself in writing on military matters. He died at Avignon in 1722.

Foland's principal work is his 'Commentaries on Polybius,' in which he not only makes his observations on the events narrated by the Greek historian, but also draws parallels between ancient and modern military practices. His reasons on the other hand, the wars which he had witnessed, exposed with the greatest freedom the errors of the various commanders of his own age. His disquisitions, though often prolix, are valuable. He had some peculiar notions on tactics, which have been refused as inapplicable to the modern system of warfare. For the rare judgment of these matters, says that 'Foland had scattered diamonds amongst dung, that his system of columns in deep order was worthless, but that the movements which he describes so well, and certain instances of ingenious defence which he explains, may have been the strictures of the conduct of some French generals, and also certain projects of his which give rise to reflections more useful than the projects themselves.' Foland's 'Commentaries on Polybius,' from 1669 to 1730, and again at Amsterdam in 7 volumes, contained 1200 pages containing some treatises and strictures on Folland's system of tactics, with his own replies.

FOLAND. [BOLAND.]

FOLIO. from the Latin folium, properly signifies a leaf; and in books of MS. a leaf, or two pages, of a ledger-book. Folio a and b, or recto and verso, are antient and still continued distinctions for the first and second sides of the leaf or folio, in manuscripts and early printed books.

FOLKES, MARTIN, an eminent English antiquary, whose the eldest son of Sir Hans Sloane, for the office of president, and his interest was supported by a great number of members, though the choice was determined in favour of Sir Hans. He was, however, again chosen of the council in 1729, and continued in it till he was advanced to the presidency. The president's chair was then vacated, in 1733, appointed one of the vice-presidents by Sir Hans Sloane. In the year he set out with his whole family on a tour to Italy, and, after residing a considerable time both at Rome and Florence, returned to England in Sep- tember, 1735. Having joined the Society with which he had revisited and enlarged it; but, for some reason, this was never done. In the same year however, in 1736, his observations on the Trojan and Antinome pillars at Rome' were read in this Society, and afterwards printed in the first volume of their 'Archæologia,' which contains another paper.
to him on the brass equestrian statue of Marcus Aurelius at Rome, occasioned by a small brass model of it being found near London. In April he also communicated to them 'A Table of English Gold Coins from the 1st year of King Edward III., when Gold was first coined in England, to the year 1700, with their Weights, intrinsic Values, and some Remarks upon the several Pieces.' Mr. Folkes, in order to illustrate this work, had set about engraving, and actually did engrave 42 copper-plates of English silver coins, which were left at the time of his death in an incomplete state. These, together with the right of the design, and even the gold before mentioned, were purchased by the Society of Antiquaries, December 19th, 1754, for 120l., and the whole published, with great additions, both as to letter press and plates, under the care of Dr. Andrew Gifford, in 1763.

Sir Hans Sloane having, on account of his advanced age, resigned the office of president of the Royal Society, at the annual election in 1741, Mr. Folkes was unanimously chosen to fill that honourable post; and, in the following year, was chosen to succeed Dr. Haller, as a member of the Royal Society. This same year, in the University of Oxford conferred upon him the degree of LL.D., and he was afterwards admitted to the same degree at Cambridge.

On the death of Algernon, Duke of Somerset, president of the Society of Antiquaries, February, 1759, Mr. Folkes, then one of the vice-presidents, was immediately chosen to succeed his grace in that office, in which he was continued by the charter of incorporation of that Society, November 2, 1751. But he was soon disabled from presiding, by an illness which cost him the life of the Royal Society, being seized on September 29th of the same year with a palsy, which deprived him of the use of his left side. In this unhappy situation he languished nearly three years, till a second stroke put an end to his life, June 25th, 1754. He was buried in the churchyard of his father and mother, at Hiltingdon, near Eynsham, as the black marble slab, in which his remains are interred, is inscribed, 'Hic jacet locis seu cumi, in quo res suae officii consistunt, ac in quo, ut dicuntur, multum est oris.'

A monument to his memory was erected in Westminster Abbey in 1792, in a window on the south side of the choir, opposite to the monument of Mr. Thynne. (Nollekens's Appendix to Roger, etc. London, 1752, p. 562-566, from a monument prepared for publication by Dr. Birch; Chalmers's Biogr. Dict., vol. iv. pp. 428-431.)

FOLKSTONE. [Kent.]

FOLK-MOTE, or FOLK-GENESE, literally a meeting of the people; an assembly under the Anglo-Saxon government, respecting the nature of which some of our antiquaries have differed. Somner, in his 'Anglo-Saxon Dict.-ary,' calls it a general assembly of the people for considering and ordering matters of the Commonwealth. So the laws of King Edward the Confessor, 'Fele mote, i.e. vacatio et congratio popularum et gentium omnium, quia ibi omnes convivum debent, et universi qui sub protectione et pace Dominii Regis degunt.' The continuation of this statute of Edward the Confessor expressly directs that the meeting of the Folk-mote should be held once in the year upon the 1st of May. 'Statum enim quod ibi debent populare iungere, et congregatio, sicut etiam in anno sollicitum conventum, sicut in capite Kal. Maii.' (Willk. Leg. Anglo-Sax., p. 264.)

Brady, in his 'Introduction to Old English History,' Gloss. p. 47, is entirely mistaken when he speaks of it as an inferior ordinary court, held once a month. The Folk-mote and Shire-mote (or general meeting of a county) were synonymous. (Willk. at synp. Gloss. p. 484.)

In later times a Folk-mote, according to Stow, among the citizens of London, meant a meeting of themselves. Fan, in his 'Chronicles,' ed. 1841, p. 344, mentions a court of folk-mote held at Paul's Cross in 1256; and another assembled by command of Henry III. (ibid. p. 345), *where the king, according to the former ordinances made, axed judgment of the contumacy of the city to pass the sea.*

FOMALHAUT. [Picis Australis]

FOMENTATIONS are liquid applications, generally of a warm temperature, placed in contact with a limited portion of the body, to mitigate or remove disease of the part, or of the neighbouring organs. They differ from partial or local baths, chiefly in the greater length of time which they are kept applied. Planed cloths, or other substances fit to retain heat and moisture, are commonly employed. To enable these substances to retain the heat still longer, they are often covered externally with oiled silk. It is proper to renew the application before the cloths begin to give a feeling of coldness. The liquids used are of various kinds, sometimes pure water; at other times, medicated; they are termed emollient when charged with mucilaginous principles, such as mallows, and sedative or anodyne when they contain a narcotic principle, such as poppy heads.

FOND. [Lavoro, Terra ut.]

FONT, a vessel employed in Protestant churches to hold water for the purpose of baptism, and in Catholic churches used also for holy water. The form of the font is usually hexagonal, similar to the form of the baptismal, in which fonts were originally placed. There are a great many fonts in England curious both for their antiquity and their architectural design: they date from the Saxon period to the time when the fluted style of Gothic architecture was in vogue, in the reign of Henry VII.

Although the hexagonal form is the most usual, yet fonts occur both of a circular and square form. They are usually shaped like a cup, with a solid stem, or supported on columns; the top is hollowed out for the water, and the sides and stem are often highly enriched with ornament, sculptured figures, and with colour and gilding. In many instances a flight of steps forms a base, and the sides of these steps are carved with panels, having quatrefoil and rosette sunk within them. It was usual to cover the basin of the font with a wooden lid, and there are some of these remaining of a pyramidal or spire-like form, richly carved and designed with a profusion of shafts, butresses, and tracery piled up to the apex. There is such a cover in Castleacre church, Norfolk. Porchester church has a very antient font, of a circular form, like the antient Roman circular or stone-mouth of the well in the atrium of a Roman house; it is decorated with intersecting arches or columns, with a frieze of foliage, and figures above. Lincoln cathedral, and the South Church in Hayling Island, Hampshire, are examples of the square form of font on the
The font of Blythborough church in Suffolk still shows some traces of colouring and gilding; and that of Lowestoft church in Norfolk has some fine remains of sculptured figures. The château of Fontainebleau, which derives it's name from a fountain, called, in ancient times, Fons Blaudi or Blaudi, and said to have obtained that name from Blaud, one of the hounds of Louis VII, is another example of the choice of names which are usually designated, originally intended for holy water.

The garden of the town and its neighbourhood produce a grape which is known at Paris by the name of Chasselas de Fontainebleau. The arrangements of Fontainebleau comprehends seven cantons, and 104 communes; it bad in 1832 a population of 69,933.

The Forest of Fontainebleau occupies an extent of nearly 33,000 arpentas, about 41,000 acres, or 64 square miles: its boundaries is marked by a line of tall trees, which pierce the forest in various directions, impart to it a considerable degree of picturesque beauty: the bermitage of Franckard, about two or three miles north-east of Fontainebleau, is one of its most remarkable sites. The Forest of Fontainebleau furnishes an extensive supply of coal, but with a considerable portion of its pavement. There is a good quantity of game; wild boars are numerous.

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The forest is marked by a line of tall trees, which pierce the forest in various directions, impart to it a considerable degree of picturesque beauty: the bermitage of Franckard, about two or three miles north-east of Fontainebleau, is one of its most remarkable sites. The Forest of Fontainebleau furnishes an extensive supply of coal, but with a considerable portion of its pavement. There is a good quantity of game; wild boars are numerous.

The gardens of the town and the neighbourhood produce a grape which is known at Paris by the name of Chasselas de Fontainebleau. The arrangement of Fontainebleau comprehends seven cantons, and 104 communes; it had in 1832 a population of 69,933.
the abbé, though he was somewhat reticent on two points. In the first place, the abbé demanded a public apology for his father, who was then of the second degree; and, in the second, he hinted strongly that the public should be given to the actors a comedy which he had written. He made the required apology, but he applied to the Sorbonne before he yielded to the second demand; however, receiving an unfavourable answer, he committed the comedy to the printer, and published it at a great risk on the pretence of having only chance of accumulating a small sum, by an act which in itself involved no moral wrong, but merely happened to be at variance with the prejudice of the clergy, is a striking instance of the bigotry of the times.

In 1808 La Fontaine became very ill, and was at once received into the hospital, with much attention, by his devoted friend, M. d'Herrart, who did not kindly offer him an asylum in his own house. He died 1763.

The works by which La Fontaine is known are his Tales and his Fables. The former have a very equivocal set of readers, and are seldom mentioned in society; the latter belong to that small class of works the reputation of which never fades, and which are as well known at present as they were in the seventeenth century. Immortal are the lessons of these fables, and great is the field they have offered for the ingenuity of artists in furnishing illustrations. To say nothing of the various unnotated editions, there has been a variety of attempts to give them a popular form, and to adapt them to the taste of the present day. The most celebrated of these was published by the Abbé de Fontaine, who added vignettes to a huge folio with large and elaborate plates; and even now an edition is publishing adorned with fine wood-cuts, representing all the animal-mentioned in the fables in human dress. It is remarkable that La Fontaine was not inclined to this. His stories, however, have been taken from Boësset, Machiaveli, Ariosto, and others; his fables are chiefly selected from Æsop. It is not the matter of his compositions, but the manner in which he tells a tale, that constitutes his merit. His narrative is unusual in its beauty, and grandeur, and La Harpe is of opinion that are to be perceived, not described; for after a profound philosophical investigation, he concludes, 'We arrived at the ultimate cause of excellence, and referred the point to La Fontaine himself, the 'bon homme.'" (He is called "the father of modern fable," and it is said of him that he wrote them as a humour diet, and that was all."

Curiosity will cause a reader to wade through a new story even when indifferently written; but a man who, by his mere manner of narrating, can make a vast number of readers purse a series of narratives, with every incident of which they are perfectly acquainted—must have talents great indeed.

**FO TAINE, LÉON**

**FONTANA, DOMENICO.** A distinguished Italian architect, born at Rome, March 3, 1588, and died at Turin, June 15, 1654. The only work of his which has come down to us, is a portico consisting of an upper and lower gallery, in five open arches, the piers of the former ornamented with a Doric and those of the other with a Corinthian order. Immediately adjoining this portico he also erected the palace of the Lateran, a uniform pile of building, and a series of windows above the lower floor, all of which have pediments alternately angular and curved, and the whole is surmounted by a massive and rich cornice. By the same pontiff he was likewise charged to construct the Vatican and its weight calculated at about 410 tons. (See Antiquities; Lib. Eur. Antiquity, vol. i, chap. 15.)

In addition to tasks of this nature Sixtus afforded him the opportunity of displaying his talents as an architect by giving him charge of the various works at the Lateran, which were begun after his elevation to the pontificate. Among these is the portico consisting of an upper and lower gallery, in five open arches, the piers of the former ornamented with a Doric and those of the other with a Corinthian order. Immediately adjoining this portico he also erected the palace of the Lateran, a uniform pile of building, and a series of windows above the lower floor, all of which have pediments alternately angular and curved, and the whole is surmounted by a massive and rich cornice. By the same pontiff he was likewise charged to construct the Vatican. Among the works which he undertook was the restoration of the columns of Trajan and Antoninus, and the church of San Lorenzo in the Fountain of Tertullian. He was preparing to erect a vast edifice for a cloth manufactory within the Colosseum, the plan of which was to have been elliptical, like that of the amphitheatre, the structure of which plant was fashioned to an ellipsoidal head by means of a series of curved arches. But, before he could commence the work, he was frustrated a scheme that would irretrievably have marred the sublime and majestic character of that monument of antiquity.

The death of that pope brought a change of circumstances to Fontana, who was dismissed by Clement VII.
from his situation as papal architect. Still his prosperous fortune did not desert him, for he was immediately invited to Naples, by the vicerey, the Count de Miranda. In that capacities he received the University of Lorraine, with a variety of works; and among others he executed the fountain of Medina; but the most important of them all was the royal palace, and grand imposing, although not particularly elegant edifice. He died in that city in 1607, possessed of considerable wealth.

FONTARABIA, or FUENTE RABIA. [Guipuzcoa.]

FONTEVRADELORNE, a town in France, capital of an arrondissement in the department of Vendée, and on the left or north-west bank of the river Vendee, which unites with the Scarcé at Nort, it is 381 miles south-west from Paris, by the road through Orléans, Blois, Touza, Poitiers, and Niort.

The town owes its origin to a castle which the counts of Poitiers caused to be built here, and of which there are some remains. Fontenay was twice besieged by the Huguenots in the religious troubles of the 16th century (a.d. 1568 and 1570). In the first siege, which was successful, the conquerors, in violation of the terms of the surrender, put the garrison to the sword, and afterwards slew the commandant, whom they had taken to Rochelle. In 1574 Fontena was the scene of still greater atrocities perpetrated by the Catholics.

The town stands partly in a valley on the bank of the river, partly on a hill. The streets are narrow, crooked, and ill paved. The Hiour of Notre Dame is remarkable for the extraordinary height, which is about 300 feet. The covered market-places are of unusual size for a small provincial town. The population in 1832 was 6398 for the town, or 7504 for the whole commune. The chief manufactures are linen and coarse woollens, of which the town is celebrated. There are several tann-yards and some breweries; trade is carried on in corn, cattle, horses, mules, wood, charcoal, and wine, of which last the neighbourhood produces some white of ordinary quality. There are four yearly fairs and a large corn market. The manufacture of linen is ancient, and was encouraged by the government.

The town is also remarkable for the annual fair, which is held on the first day of January, and is one of the largest and most extraordinary of the kind in France. The population is about 20,000.

In his personal character Fontenelle presents a rare instance of self-command and moderation, neither confounding virtue with austerity nor pleasure with excess. To the measured reserve of his character there is a somewhat exaggerated pride, and he was inclined to assume a moral and philosophical character, in which, all the while he had never laughed nor wept. As he held it to be the duty of the sage to cultivate all his senses, internal as well as external, and to combine with the enjoyment of all nature the exercise of all his faculties, the tone of his mind exhibited a happy harmony of all the passions of the heart.

The universality of his pursuits, which embraced nearly the whole domain of literature, offered on the one hand an insuperable obstacle to unrivalled excellence in any single department, but contributed on the other, by enlarging his views and increasing his store of knowledge, to render respectable his attainments in all.

As a poet, in which character he made his first appearance in the world of letters, he composed several tragedies and odes, most of which were unfavourably received; and among them was the 'Théâtre des Antiquaires,' in two acts, which is a very good piece. In 1652, the poetical work of Voltaire, a great enthusiast in the 'rational' theories of the 18th century, was published, and Fontenelle, who had always been a warm admirer of the ancient philosophers, was among the first to express his approbation of the new system, and was接著 the first to publish a translation of the 'Dialogues des Morts,' with the addition of some notes and a preface.

Fontenelle's style is elegant, and his language is clear and natural. He is a master in the art of combining thoughts and expressions, and his genius is equally adapted to the fine and the easy styles. His works are all marked with the same spirit of truth and candour, and are equally distinguished for their elegance and their simplicity.

The reason of the passions, as the title of the volume prefixed to his 'Essais,' is the subject of his first essay. The title of the second is 'De la Nature des Passions,' and the subject of the third is 'De l'Idée des Causes.' The latter is a work of great importance, and is one of the most interesting and instructive of all his writings.
he was able to enact at once the man of fashion and the man of letters. By his wonderful skill in adapting himself to the capacity of others, he was able to improve and ennoble the circulation of scientific and metaphysical ideas; and by applying the language of ordinary life to the most abstruse topics and ideas, he contributed greatly to transfer the tribunal of letters from the scholarly few to a large and un.EqualTo-class body of readers, and, by this revolution, to favour and advance the formation of scientific men in the seventeenth century. Such services may be forgotten, for the names of those who have laboured not so much to di-Easier new truth, as to preserve and transmit the old, are too often left unrecorded; but they have not laboured in vain, for to diffuse truth is as useful as to discover it. If the mission of the disseminator be more dazzling in its course, and its track more permanent, that of the disseminator is not less beneficial to mankind, and leaves, in a more extended civilization, a nameless but imperishable monument.

The works of Fontenelle were collected and published in 8 vols. 8vo, Paris, 1760.

I
FOOD. All organized bodies are nourished by the introduction into their internal structures of materials from without. Such materials are called indifferently animal or vegetable, and are fitted to supply and maintain the fluid and solid matter of the body. For this purpose they must either be suitable naturally, or capable of being dissolved by the digestive principle of the stomach. However diversified the nature of these materials may be in the radii of their composition, they are reduced by the action of the organs of digestion into a fluid (chyle) [Diggren] of homogeneous character, which is resuscitated into solids and fluids of different natures by the influence of the process of assimilation. Before undergoing this second change, they must be brought into the state of arterial blood, and so form a part of the circulating fluids of the body. Substances which are incapable of undergoing these successive changes cannot be considered as articles of food, or means of nourishment by the nourishing principle of the frame. There are however various articles which, although incapable by themselves of nourishing, appear, when taken in conjunction with other articles, to contribute essentially to nutrition. But even of substances unquestionably nutritious, the whole mass is never completely nutritive, i.e. capable of being entirely assimilated; some portion of it merely giving it bulk, or being of a nature calculated to make certain impressions on the organs of digestion, and to stimulate them to those actions which conduce to the exercise of the functions of digestion.

There substances which have previously been endowed with life can alone be considered as affording nutriment to animals of a high degree of organization, such as man, or of whose aliment we here mean to treat. For a practical view of the aliment we divide it into the two sub-divisions, namely, animal and vegetable. The first comprehends the real materials or sources of nourishment; the second conduits, &c., which either render the food more grateful to the palate, or by a vital or chemical action on the organs of taste and the stomach part in digestion.

It is customary to distinguish the articles of food into solid and fluid, or meats and drinks, and into animal and vegetable. But the former is merely a distinction of convenience, and does not extend to any ultimate difference in their nature, but only to the manner in which they are respectively treated by the organs of digestion, while the latter is only important in a medical point of view, as relates to the amount of nutriment in a given quantity of food, and the impression which the two kinds of food make upon the system generally. Specific differences are distinguishable in the chyle at least, if not in the chyle, according as the food from which it is formed has consisted of vegetable or animal matter, and according as it has contained fatty or oily substances, or been destitute of them. Nor do these differences contribute to the nourishment of the body by being assimilated by it when they can be resolved into their organic molecules, and as these are only found in the proximate principles of animals and vegetables, of which principles none perhaps are exclusively more advantageous to health than the latter are. The former, however, in a small degree, can be assimilated without reference to the source whence derived. The molecules can only be liberated by being diffused through some fluid, and therefore it matters not whether they be brought into such a condition by external agency or by the apparatus with which the higher animals are furnished, viz. the teeth, stomach, &c. To a fluid state they are reduced, or at least approximated to, by the means of the alimentary canal. The resolution of the materials of food into their organic molecules is the real office of the digestive organs, while exercising that function within healthy limits: the resolution of the proximate principles of vegetable or animal substance is the primary or ultimate principles, when various gases are evolved, is a morbid or diseased action of these organs.

The proximate principles of alimentary substances consist sometimes of three, sometimes of four elementary or constituent principles. Those which consist of three are of most frequent occurrence; those which consist of four are of most frequent occurrence in the animal kingdom. Where the elements are three only they are generally oxygen, hydrogen, and carbon; where four, oxygen, hydrogen, carbon, and nitrogen, or azote.

The presence of carbon is the characteristic of vegetable matter; the predominance of nitrogen the characteristic of animal matter. Wherever nitrogen is absent animal matters the substance approximate, or is analogous to, vegetable matter, such as animal fats, which closely resemble vegetable fats in their behaviour to the teeth and stomach. Carnivorous do not prosper if kept long on food destitute of azote, but man, whose dwelling-place is under different climates, can dispense with an azotized diet in some parts of the world than in others, for instance, better in tropical than in cold climates. It is among the Chinese attendants on the caravans in their journeys across the deserts of Africa can subsist for a length of time on gum, which does not contain azote. Majendie, who carefully investigated this subject, concludes from his experiments—that Animals derive from the food the matter with which they are nourished, and hence, that no animal can live for a considerable time on food entirely destitute of azote. 2d. That animals, even those naturally carnivorous, can live a certain time upon food entirely destitute of azote, in consequence of the presence of nitrogenous substances in their food, and because they are fed on animal food, and acquiring the properties which these excretions have in animals whose food contains a very small proportion of nitrogen. 3d. That vegetable and animal substances destitute of azote are highly nutritious, provided at the same time azote can be supplied from some other aliment containing it, though not in small proportion. It seems however that vegetable aliments acquire an accession of azote in the digestive organs, though probably at the expense of the azote already contained in the same. Admitting the general correctness of Majendie's views, alimentary substances may be divided into three classes.

I. Those which contain azote, carbon, oxygen, and hydrogen.

II. Those which contain carbon, hydrogen, and oxygen.

III. Those which contain neither azote nor carbon.

The first class naturally demands the greatest share of attention, because the aliments which contain azote can correspond with animal substances in general, and are calculated to repair the waste of our solids and fluids without great alteration or effort in the digesting organs. All the immediate principles of this class are not however equally digestible, or possessed of the same properties. It is necessary therefore to say a few words on the leading forms or species in which azotized principles occur.

I. Fats. Fats are found in the animal kingdom, constituting the principal part of the muscular fibre of animals, and no inconsiderable portion of the blood, when by rest that fluid is coagulated. It has been taught to exist in some of the constituents of the vegetable kingdom, particularly in the juice of the flours of the Carob, Papaya, or papaw-tree, and in certain other plants with a milky juice, such as the Palo de Vaca, Cow-tree (Galactodon utile) of South America, and in some fungi, or mushrooms. The identity of the principle found in these vegetable materials with the animal fibrin has been confirmed by recent chemists. Dr. Thomson considers the principle of the cow-tree distinct, and terms it galatin, while Gmelin terms that of the others emulsion, which he considers analogous to gluten.

Fibrin constitutes the chief part of the solid matter of the muscles of animals, particularly those of which we are old and have dark-coloured dry flesh: it is that portion which re-
mains in the form of fibres after all the soluble matters have been removed from the flesh of animals by long boiling. It is insoluble in cold water, is corrugated by long boiling in water, is insoluble in alcohol, but strong acetic acid causes it to swell considerably, rendering it transparent like cellulose. It is then dissolved, or, at least, diffused through water by long boiling.

The flesh of animals is divided into white and coloured, and indeed it differs in the same animal at different ages, having different accompanying constituent principles at different times, or combined with them. In old wine, white, or only pinkish; in the ox they are deep red; in the first state much gelatin and little of osmazone is present; hence the gravy of veal easily gelatinizes, while that of beef rarely does so.

It is observed in general more tender, that is, more easily digested, because the force of aggregation is more easily overcome by the powers of the stomach in middle-aged than in old animals, and in the flesh of the female than that of the male, unless the males have been castrated when young.

Albumen is another important constituent of animal bodies, but of more sparing occurrence in vegetable substances. In animal substances it occurs in two states, fluid and coagulated. The most perfect examples of it in the former state are the white of eggs, which is an alkaline albumin, or a globulin; and the flesh, when dry, it is a protein, and it is likewise solidified by many acids, as that of the gastric juice (in the form of rennet), and by some metallic salts. Milk, though coagulated by acids, is not so by boiling.

Gelatin is likewise found in the green fucuses of plants in general, and in some vegetables in very considerable quantity, such as the fruit of the Hibiscus cocculentus, or Ochro, and the bark of the Ulmus campestris, or elm. The former is used in Sicily to thicken soups, and both are used in making jellies, puddings, &c.

Gelatin abounds in most animal substances, and is common in proportion to the youth of the individual. It exists in bones, ligaments, tendons, membranes, skin, muscles, as well as in a portion of the horns of animals. The skin of fish, much of their substance, and the swimming-bladder of the sturgeon are formed of gelatin. It is remarkably bland and nearly insipid, as may be remarked in any solution of isinglass. Gelatin is not of common occurrence in the vegetable kingdom, and it is distinct from vegetable jelly, which occurs in many vegetables, in various parts of plants, viz. in all oily seeds, which when triturated with water form an emulsion. The real nature of this principle is not clearly ascertained. Many chemists deem it identical with animal albumen; others consider it identical with the casein of milk, while others pronounce it to be gelatin. To Gmelin it appears distinct; he has accordingly given it the above name.

II. Proximate principles which consist of oxygen, hydrogen, and carbon.

Gluco is a principle of vegetables, in all of which, but mostly soft parts of them, it is found; in some, however, it abounds so much as to form their chief characteristic; they are thence called mucilaginous, or gummy, such as the carrot, parsnip, &c. Gum is colourless, but from admixture of other matters it is often of a yellow or brown tincture, and has a very sweetish, but not crystallizable, taste. When pure, it is entirely soluble in water, whether warm or cold, forming with it a tenacious fluid; it is insoluble in alcohol. In the state of solution in which it occurs in plants, of which it forms the essential nourishment for their nutriment, it is termed mucilage. From some trees, either by spontaneous cracks or incisions, it exudes and concretes on the bark, as is seen in the various acacias, which yield the gum arabic, the plum, and cherry trees, &c. There is a great diversity in the appearance of the various kinds of gum, according to the plant which yields it, but these scarcely affect its nutritive properties.

The principle which is found in many fruits, such as the gooseberry, currant, orange, &c., which is vegetable jelly, is regarded as a kind of gum, though designated pectin. This is neither acid nor possessed of basic properties, and the reason why it so often seems sour is by being united...
with vegetable acids (malic, citric, &c.), which communica-
tively the juices of these fruits their taste, and also enable
them to redden limous paper. The grateful and cooling
properties of such fruits is therefore chiefly due to the
vegetable acids, while their nutritious qualities depend
upon the portion of their principal

Mucilaginous vegetables are rarely fit for use when grow-
ing wild; but they are much ameliorated by the processes
of horticulture, having their bulk increased and their qua-
lties improved. Those which are bitter or narcotic, as
asparagus, lettuce, sea-kale, &c., being by blanching, rendered
mild and safe, or by being served to table while young,
asparagus. The difference in flavour of such young-
leaves is due to the principles with which the gum is asso-
ciated; but their nutritive properties are owing to the gum,
which is a natural pectin, and, although degenerated and
repudiated by the palate, is certainly adequate to the sup-
port of the human frame for many weeks or perhaps months.

During the harvest of grain in the Gymnocalycs
there exists however a nutritious quality which
is induced in large quantity as a product of perver-
cision of the digestive and assimilating organs, in the
lactic and intestinal diastases. [DAVETS.] In chemical com-
position, the flour, starch, &c., which are capable of with-
some of the peculiarities of each of the food,
fermentation; starch of milk and mamme are
examples of the second class. A remarkable feature present-
s itself in sugars of the first class; for, while susceptible,
when dissolved in sufficient water, of the viscous or aero-
tic fermentation, they greatly assist, when concentrated,
in preserving vegetable substances, either when naturally pre-
seated in them, as in many fruits, grapes, raisins, prunes, &c.,
or when added artificially in making conserves, jellies, &c.
Those fruits which grow in seasons favourable to the elabo-
ration of sugar thus procured, and can be made to keep better, but are more wholesome than when grown in
less favourable years.

Honey contains a variety of sugar, which is both mou-
sling and capable by fermentation of yielding meal. Many
favourably have the taste of the honey of the British. Many fungi, or mushrooms, contain a peculiar kind of sugar, which contributes to render them nutritious

Starch possesses a larger proportion of carbon than sugar
and gum, by removal of this additional proportion of carbon
it is reduced to the state of an inferior of those principles.
This process of reduction occurs spontaneously in the course
of flowering in plants, and in the stomach during digestion.
When combined with gluten, it is susceptible of fermenta-
tion, and by undergoing the panary fermentation forms
the material of the bread, a food favourable to the health of
mankind. As this is ordinarily managed, some portion of the
flour is made to yield up a certain amount of its carbon;
but the precise nature of the change which the flour under-
goes during this action is not clearly understood. The
digestibility of the flour is however greatly increased by this
process; and by various admixtures, chiefly of common
salt, the taste is improved.

Starch exists largely in plants, but more abundantly in
some parts than others; such as many seeds, particularly of the
peanut, barley, maze, and millet, in which it occurs in great purity; in wheat along with gluten; with
saccharine matter in oats, and some leguminous seeds;
with a viscid mucilage in potatoes, rice, and Windsor beans,
and occasionally with an arsenic principle, which can gen-
erally be dissipated by heat, as for example the Jatropha
Manihot, which yields tapioca. Though seeds and roots
yielding starch in abundance are all comprehended under
the term furnaricose, there are essential differences be-
tween them according to the principles with which it is
associated, which cause them to differ in their digestibility,
and consequently in their eligibility and suitableness for
different ages and individuals. Flour, starch, arrow-root,
and tapioca, in the form of their preparations, are all merely varieties of the same principle.

Starch is not only highly nutritive, but one of the blandest
and most wholesome articles of diet, capable, in due pro-
portion, of being used for the food of tender infancy, and
not improver at any subsequent period of life, therefore
during youth and manhood it requires other principles to
be taken along with it.

Oils and fat, however much in some respects to the
other principles arranged under this head, are formed
not of carbohydrates, but of fats, and their properties
in digestion the stomach brings even the most apparently
dissimilar into a degree of relationship more intimate than
might have been anticipated. The chief difference between
them and the alimentary substances already mentioned is
in their greater proportion of hydrogen. Sugar and starch
are both susceptible of fermentation, during which a por-
tion of carbon is removed from each by combining with
oxygen and escaping in the form of carbonic acid gas. From
starch, in the early stages of fermentation, one pro-
duction of sugar; and, during this process, if the starch
sugar, from which again a portion of carbon and of
oxygen is taken, and alcohol produced, the hydrogen re-
mainning diminished in quantity; and as alcohol is merely
an oleaginous body of a weak kind, the analogy is complete;
and, if the brain and the body are to be sustained in the
digestive organs before they can be assimilated in the
system, similar to what occurs in fermentation, viz.
being converted into oil. [Digestion.]

Oils are in-soluble in water, and therefore, though higher
products, are not equally suitable for the support of the
body till their immiscibility with water has been overcome.
Hence they are apt to oppress the stomach during the early
stages of digestion, if taken alone without being mingled
with substances which facilitate their union with water.

Aids are either fluid or concrescent, and, as both forms occur
in the animal and vegetable kingdom, though in the latter
they are most generally fluid.

Arcts are present in many vegetable substances which
afford the-fine organs in various ways, though they may
not be directly oil productive issues, nor even oil

III. Alimentary principles which do not contain carbon.

Water is the only one of these which it is necessary to
notice. This is essential to the existence of all organized
beings in whatever way it is introduced into their tissue-
substances. It is the medium of the exchange of trans-
port between the general blood and the common water, and many beverages of which the chief part
is water, but our ordinary articles of animal food contain,
on an average, seventy-five per cent. of water, and only
twenty-five per cent. of nutritive matter; and many of our
vegetables contain a still larger proportion.

Such are the chief principles employed by man in a state
of civilization for his subsistence. But it is not enough
that a sufficient quantity of one or more of these be swal-
lowed. The function of digestion must be called into
operation to convert those substances into food in every part of the body. In the first place, the food is partly
excited by the mere presence of a substance in the
stomach, but more effectually when that substance is in
itself of a stimulating quality, or is accompanied by certain
accessories either added during the preparation of the food
or at meal-times. Such accessories are termed condiments,
which either make the food more grateful, or exercise a
beneficial influence over the stomach during the process
of digestion. The desire to eat is rarely so great when unad-
justed food is offered to an individual as when savoury viands are
preparations for the digestion of the food
are about to be taken. Though the mere application of
heat in the process of cooking develops an aroma from
many substances which were previously devoid of it, either
by altering the chemical composition of the material, or by
volatile a principle latent in the substance, yet many
adventitious articles are used to assist in increasing or modifying this odour, or to correct certain qualities in particular foods. I have had no experience of these latter objections, and I have no reason to except them from general use. Respecting the commonest of them, the few words which may be allowed. That condiment which is of most universal requirement and utility is salt, or chloride of sodium. It is the only one which is indispensable, for not only does it aid in digestion, but it is also of great necessity to the infant, but at all subsequent periods of life it is needed. Indefinitely of the part which this compound performs in the stomach during digestion, it is still further serviceable in the blood, and more so in the blood of man than of any other being, as Berzelius observes. Indeed that the blood of man contains three times more hydrochloric than that of the ox. Besides, the use of salt greatly benefits the alimentary canal and hinders the generation of worms. [Antiseptics] It is one of the most ready means of rendering indigestible substances acceptable to the palate, as it is one of the earliest compositions which have come down to us. Can that which is unsavoury be eaten without salt? (Job vi. 6.) Perhaps the next most important condiment is vinegar, which, like most vegetable acids, when taken in moderation, greatly assists in promoting the digestion of young meats of a gelatinous kind, such as veal.

Mustard and peppers of different kinds are also useful, and more so in warm than cold countries, as they rouse the languid stomach, and enable it to effect the digestion of the food. Most of the spices which used to be employed at the same time are often advantageous when used in moderation, but the abuse of such articles produces many serious effects, particularly obstruction of the liver, with its long train of disorders. The use of spices and aromatic agents not only renders the food more savoury, but also aids in digestion. In the hands of an expert cook, alimentary substances are made almost entirely to change their nature, their form, consistence, odour, savour, chemical composition, &c.; every thing is so modified that it is often impossible for the most skilful analyst to determine which makes up the bases of certain dishes. The greatest utility of the kitchen consists in making the food agreeable to the senses, and rendering it easy of digestion. But its perfection seldom stops here; frequently among people advanced in civilization the object to which it aspires is to excite the appetite, to appease capricious palates, or to satisfy luxurious vanity. Then, far from cookery being a useful art, it becomes a real pestilence, carrying with it a train of diseases, and not unfrequently the premature death of those infatuated with 'Gustus.' (Majendie's Physiology.)

F O O D. P R E S E R V A T I O N. O F. [A N T I S E P T I C S.] FOOD OF LABOURERS. It has been justly asserted by Dr. Paley that, inasmuch 'as the state of population is governed and limited by the quantity of provisions, perhaps there is no single cause that affects it so powerfully as the kind and quantity of food which chance or usage has introduced into the country.' (Paley's Works, 1819, vol. ii., p. 71.) The importance of the subject is here sufficiently proved, and I can therefore well use for a purpose connected with the alteration of the poor-laws have directed the attention of many persons to this subject. It is obvious that individuals differ in their capacities for food; that climate affects the desire and necessity for food as well as the organ of the appetite. Nevertheless, says Mr. Mott (Report of the Poor Law Commissioners, 1836), 'I submit that, although, even for persons in full health, it would be difficult, perhaps impossible, to establish any given daily quantity of food to suit the capabilities of every person, yet there is a correct rule for the whole. I have been led to believe that the result shown in the following scale may be considered as a fair estimate of the proportions of food requisite to support human life in a sound and healthy state.'

1st. Persons of moderate constitution, but using little exercise or exertion: daily allowance of food 12 to 18 ounces; in nutritive matter equal to an average daily of 10 ounces. 2nd. For persons of good health accustomed to moderate labour, as sailors and soldiers on ordinary peace duty, or agricultural labourers or mechanics at their usual work: daily allowance of food 18 to 24 ounces; in nutritive matter equal to an average daily of 16 ounces. 3rd. For persons subject to very violent exertion, in good bodily health: 24 to 30 ounces of food; equal to 22 ounces of nutritive matter. The foregoing calculations have been taken indiscriminately, and I have reason to believe that they will bear the test of examination. By a comparison of these and the provisions at such markets as the owners of a very small capital are able to purchase at, a judgment may be formed of the condition of a labourer. So far regarding the quantity of food requisite; the quality varies according to the local position of the labourer. Mr. Senior, in his 'Statement of the Provision for the Poor, and of the Condition of the Labouring Classes in a considerable portion of America and Europe' (Pollowes, 1835), gives the result of his inquiries into the food of foreign labourers. We extract the following information from his pages:

Quality of food used by an agricultural labourer having a wife and four children.

America. New York.—Ten, coffee, meat twice a day.
Massachusetts.—Poultry, meat, or fish, twice or thrice a day.
Mexico.—Maize prepared either in porridge or thin cakes, and beans, with chile, a hot pepper, of which they eat large quantities as seasoning.
Carthagena.—Of the produce of the country. chiefly animal food.
Venezuela.—Maize, vegetables, and fruit.
Uruguay.—Animal food.
Hayti.—Plantains, sweet potatoes, and other vegetables.

Europe. Norway.—Herrings, oatmeal porridge, potatoes, cheese or curds, beef from beef or salt beef perhaps twice a week. Fish on the lakes and rivers. Branly in general use.

Sweden.—In the south potatoes and salt fish; in the north porridge and rye bread.

Hansa.—(general return)—Rye bread, buckwheat, and sour cabbage, soup seasoned with salt and lard.

Denmark. Copenhagen.—Rye bread, inferior coffee, cheese, and butter.

Esthonia.—Rye bread, great, potatoes, coffee, butter, cheese, and milk.

Hansatic Towns. Lubek.—Rye bread, potatoes, bacon seldom, peas-paragraphs, grapes, cheese fish.

Bremen.—Potatoes, beans, buckwheat, greens, rye bread, meat about twice a week.

Mackinaw.—Good sound food, occasionally meat.

Danzig.—Chiefly rye bread and potatoes, meat once or twice weekly.

Wurtzburg.—Soup, potatoes, bread, meat once or twice a week.

Frankfort.—Soup, potatoes, vegetables, bread, coffee, and beer daily, meat on one or two days.

Holland (general return).—Rye, cheese, potatoes, vegetables, beans and pork, buttermilk, buckwheat, meat, &c.

Belgium. Boom.—Bread, potatoes, and milk.

Ostend.—Potatoes and bread in the towns; in the country a little butter, vegetables, and sometimes a piece of pork.

Goebel.—Rye bread, cheese, butter or fat, bacon, vegetables, coffee, and weak beer.

France. Hare.—Bread, vegetables, cider, very rarely animal food; occasionally meat or other violent excitation.

Brittany.—Buckwheat, barley bread, potatoes, cabbages, and about 6 lbs. of pork weekly.

La Loire Inferieure.—Bread and vegetables, bacon or other meat now and then.

Bordeaux.—Beef, bread, millet soup, Indian corn, sometimes salt provisions, butchers' meat very rarely.

Marseille.—Vegetables, bread, farinaceous substances made into soup, meat soup or bouillle probably once a week.

Pedernon.—No meat, little wine, twice as much maize as wheat flour.

Portugal.—Salt fish, vegetable soup, with oil or lard, maize bread.

The Azores.—Maize bread, vegetables, potatoes, and fruit, meat seldom, fish when abundant.

Greece: Potatoes, barley or wheat bread, olives, pulse, vegetables, salt fish, meat occasionally.

European Turkey.—Bread, rice, greens, dried beans and peas, olives and onions, meat about once a week.

Molta (from a communication).—Barley bread, cheese, carob, or other beans, and soup of maize or millet with

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Oatmeal and eaten and barley bread are in common use, among the Scotch, and salt fish and salted meat are occasionally obtained. The food of the Irish labourers consists almost uniformly of potatoes, with which they are frequently unable to afford salt. A herring or a small portion of salted fish, milk, or buttermilk, are luxuries within the labourer's reach; but on the other hand, families are sometimes compelled to subsist upon the coarsest potatoes; and we have heard it stated, upon authority which cannot be doubted, that rents have been raised because the tenant has been seen to eat 'apple-taters'—potatoes of the sort—to the landlord considering that their quality was too good for the consumer, who should have sold them for his own benefit and substituted coarse in their place.

The introduction of the potato as the general food of labourers necessarily works a great change in the country, where it is now seen in abundance as long as it is fed, it will not be mischievous; but when it becomes the staple evil will arise in the following manner.—The produce of an acre of potatoes will maintain at least twice as many persons as a similar surface of wheat. The population consequently will be increased; but neither the landlord nor paupers keep from year to year, nor can they be carried great distances. They therefore vary greatly in price; for the surplus crop of one year or place cannot supply the deficiency of another. It has been stated in evidence before the House of Commons that the price at some persons has been sixfold what it has been at others. Let a famine arise, and there is no cheaper food so reso|019|n. Whatever is resorted to. (See M'Culloch, Notes by Adam Smith, p. 163.) The British and Irish labourers certainly prefer a large quantity to an improved quality of food, and will drink and eat in its quality until they have a large surplusity in quantity. Their chief meal is a supper after the day's work is over. The inducements that are offered to the labourer by the law of spirits and the increased number of rye and beer houses to spend the small surplus of his income in drinking are proved to be successful by the large amount of spurious and fermented liquors now consumed. The miseries of this indulgence on the part of the host of the foot-balls is not limited to the bodies and wives of the lowest labourers, but the families of artificers and lower class workmen are often seen in want. An examination of the causes of destitution in the parish of Spitalfields, where the number of general charities is unusually large, elicited the following fact. With both hands a quarter of a pound of bread and three pence a week were consuming their wages in intimation, their wives and families could only afford themselves the remaining subsistence. An itinerant dealer was their comissary. This man, called by the appropriate name of 'Jacky All Sors,' received into his wash tub the refuse meat and fat with the scrapings of dishes and plates from neighbouring cook-shops, and afterwards found customers for this filth among the families of the silk-factory. In the "Reports of the Commissioners for Inquiring into the Administration and Operation of the Poor Laws" (1834), Mr. Chadwick states that an independent labourer was then unable to get in the shape of solid food more than an average allowance of 1 lb. 2 oz. per week.

A soldier at London, in a boiled jumper, together with other luxuries, about 16s. 8d. per week. The suspected thief was 181.

The convicted thief was 279.

The suspected thief was 3.

It is obvious that it was desirable that this table should be reversed. The independent should be better off than the dependent labourer, the dependent labourer than the suspected thief, the suspected than the convicted thief.

With a view to this result, the dictaries of many goods have been amended, and the poor law commissioners have provided that a sufficient but not an excessive quantity of food should be distributed in the union workhouses. In their Report for 1845 six dictaries have been printed (p. 64). The quantities contained in the first are as follows:

<table>
<thead>
<tr>
<th>Bread</th>
<th>Grains</th>
<th>Used meat</th>
<th>Potatoes</th>
<th>Sheep</th>
<th>Surtax</th>
<th>Cheese</th>
</tr>
</thead>
<tbody>
<tr>
<td>For each Man per week</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>Gd.</td>
</tr>
<tr>
<td>For each Woman per week</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>Gd.</td>
</tr>
</tbody>
</table>

Wheat bread is used in all workhouses. It would be difficult, for want of accurate, precise data, to estimate the comparative welfare of labourers now and at earlier periods; we are, however, inclined to think that the condition of agricultural labourers has seldom been better than in the years 1814-15-6.

(Reports of the Poor Law Commissioners: Seni's "Foreign Poor Laws; Sir F. Eden's State of the Poor, &c."

FOOLS, FEAST OF. This was a festival antiently celebrated in different churches and monasteries of France upon New Year's Day, from a very early period, when every kind of abstinence, and even indolence, was committed. It is supposed to have had its origin in the saturnalia of the Romans. The council of Basle in 1433 expressly disposed of its celebration as a pernicious custom which was then celebrated, and its abolition, at least in one district, was ordered by an act of the parliament of Dijon in 1223. The reader who would know more of this festival may read "Du Cange's "Glosary, c. KALEMRE, and Du Tillet's "Mémoires pour la 2e Histoire des Fêtes, une qui se fait actuelle dans plusieurs Eglises," etc., L'honne et à Genève, 17v11.

FOOLS' PARLSLEY. [Arumusa.]

FOOT. [Measur.]

FOOT-BALL, a ball made of a blown bladder cased with leather to be kicked by the foot; used by nomenclature for the diversion of driving the ball itself. This was an early and favourite sport with the English. Fitzstephen mentions it among the games of the Londoners in the time of Henry II. Pope, and says, 'they are no after time for a football'; 'January 2, to my Lord Bruncker's by appointment in the Piazza, Covent Garden: the street full of foot-balls, it being a good frost.' Brand "Popular Antiquity," vol. ii. p. 299, says, in the north of England, among the colliers, it is customary to send the bridegroom's going out of church after the ceremony, in order to demand money for a foot-ball.

FOOTE, SAMUEL, was born at Truro, in the county of Cornwall, but the date of his birth is not exactly known. His father named his son after the place, and he was educated at Worcester College, Oxford. On quitting the university, he commenced the study of the law, which his volatile disposition prevented him from pursuing. About the same time he married a lady of good fortune; but the marriage was cut short by her death, and he plunged into all the vices of the town, particularly gaming. His fortune being speedily exhausted, he turned player from necessity, and made his first appearance in the character of Othello, in which he
Dentalina.
Mucronina.
the Orthocerina.
arrangement a the view very His placed
The produced times, general he for diata, making return his with
ably him with the general on. For instance, his leg by a fall from his horse, and was forced to have it amputated; the patent was procured by the duke as a sort of compensation for this accident. Foote did not retire from the stage on account of the loss of his limb, but acted with a cork leg.

His death is said to have been accelerated by the shock he received on a servant preferring against him a charge of the worst nature; he was tried and honourably acquitted, but seems never to have recovered his spirits. Feeling his health decline, he let his house to Mr. Colman, still in the same manner, and one of his characters he was seized with paralysis on the stage. He went to Brighton for his health; and on his return to London he set out for Paris, and died on his way, at Dover, in 1777.

Complete editions of Foote's works are easily procured; but scarcely a single piece is now produced on the stage. In fact, notwithstanding their great merit, they refer so much to the humours and often the persons of his own times, that they now possess rather an historical than a dramatic interest, as will be read by those who are desirous of having a view of the striking characters in the latter part of the last century. The Methodists are loved in 'The Minor,' the passion for travelling in 'The Englishman returned from Paris;' the newspapers in 'The Bankrupt;' the debating societies in 'The Orator in the Lane Lover;' and in general every piece has its peculiar object of satire. In making his characters stand prominently forth, Foote is not excelled; but, like most depictors of humours, he occasionally falls into the error of giving abstractions rather than probable persons. The pieces which keep the stage longest are 'The Mayor of Garratt' and 'The Liar,' the humour of which is not so exclusively adapted to a particular time.

FORAMINIFER A. An order established by M. D'Orbigny for certain foraminiferous polythalamous fusiform shells which have no chambers after their last partition. They have no siphuncle; but their chambers are supposed to communicate with each other by means of many small foraminis. This order is placed by M. D'Orbigny as the third of the Cephalopoda; but M. Dujardin has made observations on the living animals of some of the species, which induce him to assign these testaceous forms to a new class of animals inferior in their organization to the Radula, and endowed with locomotive power by the instrumentality of minute tentaculæ (Lamark). For this class he proposes the name Radiacula, and under that title it is intended to give the reader the results of his researches when fully carried out. At present we shall merely draw the reader's attention to M. D'Orbigny's arrangement of these curious minute shells which exist in myriads on the sea-coasts. The species found in the European ocean are comparatively few; and their size is very small; but the Adriatic abounds both in genera and species which are larger. The greater number are microscopic. The fossil shells are most abundant in the tertiary formations, especially in Italy. The chalk of Meudon, in the Jurassic stratum of the Charente Inférieure, and the oolite of Calne, contain them. Count Munster reckons forty species from the cretaceous freestone of Maestricht. Mr. Lonsdale enumerates ten species from the Irish chalk, and the marquis of Northampton found them in chalk clints from the neighbourhood of Brighton. Some idea of the myriads which now occur together in particular localities in a fossil state, and once swarmed in life throughout the ancient seas, may be gained from the following passage in Dr. Buckland's 'Bridge Water Treatises,' descriptive of one genus only.—'Nummulites are so called from their resemblance to a piece of money; they vary in size from that of a crown-piece to microscopic tinniness, and occupy an important place in the history of fossil shells, on account of the prodigious extent to which they are accumulated in the later members of the secondary, and in many of the tertiary strata. They are often piled on each other in enormous contact as the grains in a heap of corn. In this state they form a considerable portion of the entire bulk of many extensive mountains, e.g. in the tertiary limestones of Verona and Monte Boise, and in secondary strata of the cretaceous formation in the Alps, Carpathians, and Pyrenees. Some of the pyramids and the sphinx of Egypt are composed of limestone loaded with nummulites. It is impossible to see such mountain masses of the remains of a single family of shells thus added to the solid materials of the globe without recollecting that each individual shell once held an important place within the body of a living animal; and thus recalling our imagination to those distant epochs when the waters of the ocean which then covered Europe were filled with floating swarms of these extinct mollusks, thick as the countless myriads of 'Herœ and Cito Borealis that now crowd the waters of the polar seas.

Lamark, in his observations on Miliola, remarks that these very minute animals have had much more influence on the masses which compose the surface or exter ror crust of our globe than the remains of elephants, hippopotamuses, and the like.'

M. D'Orbigny has divided his Foraminifera into five families and has prepared magnified models, which are to be found in most collections, illustrating 100 species and all the 22 genera. Our limits will only allow us to give a mere sketch of his arrangement, as adopted by M. Rang.

FORAMINIFERA. (Asipbomorides de Haan).

Family I. Les Stichostégèes. •

Genus Nodosaria (Lamarck); Orthocera, Lamarck; Reophax; De Montfort.

This genus is sub-divided into many sub-genera.

1. Glundulina.
2. Nodosaria (properly so called).

Nodosaria contains numerous species both living and fossil, and is separated into two groups.

a) Shell not striated longitudinally.

Example, Nodosaria radicula.

β) Shell striated longitudinally.

Example, Nodosaria aquilis.

3. Dantalina.

This sub-genus is also numerous and comprehends two groups.

a) Shell without longitudinal striae.

Example, Nodosaria communis.

β) Shell longitudinally striated.

Example, Nodosaria depressa.

4. Orthocera.

5. Mucronina.

Genus Fondoncularia (Defrance) Renuina De Blainville.

Genus Lingulina.

* Aperture Marginal.

Genus Lutinum.

Genus Vaginulina.

Genus Marginulina (Orthocera, Lamarck).

Genus Planularea (Defrance) Astarta (De Montfort).

Genus Pavana.

Family II. Les E'nallostégèes.

Shell always composed of a porous tissue. Exterior rugose and covered with asperities.

* Alternation of the chambers total or partial, regular.

Genus Bégeronina.

This genus is divided into two sub-genera.
FOR

1. Bigenerina (properly so called).
   Aperture central.
2. Gemmulina.
   Aperture marginal.
   Genus Textularia.
   Genus Vulvulina.
   * * Alternation of the chambers total or partial, but irregular.
   Texture vitreous, very translucent.
   Genus Dimorphina.
   Genus Polymorpha. 
Polyomorpha is divided into the following sub-genera:—
1. Polymorpha (properly so called).
2. Guttulina.
4. Pyroliana.
   Genus Virgulina.
   Genus Spiroliana.

Family III. Les Hélicostégues.
   Section 1. Turbinoides.
   * * Spire elevated: shell free.
   Genus Clavulina.
   Genus Uvigerina.
   Genus Bulimina.
   Genus Vulvulina.

* * Spire subelevated.
   Genus Rossiana (Cidarolus? De Montfort).
   Genus Rotalia.
Rotalia, which is abundant in living and fossil species, is
divided into the following sub-genera:—
1. Rotalia (properly so called).
2. Discorbus (Lamarck).
3. Tronchulina.
4. Turbinulina.
   Genus Calcarina (Siderolites, Lamarck; Tino-

   Genus Globigerina.
   Genus Gyroidina.
   Genus Truncalina. (Hammonia, Soldani;
   Polyxenes and Cibiches, De Montfort).
   Section 2. Ammonoides.
   Genus Planulina.
   Genus Planorbilina.
   Genus Operculina.
   Genus Soldania.
   Section 3. Nautiloides.
   * * Chambers assembled on alternating axes; aperture to-
wards the middle of the chamber.
   Genus Cassidulina.
   * * Chambers not alternating or threaded (enfilade) on a
single axis.
   * * Sides unequal: one protubent, the other flat.
   Genus Anomalina.
   Genus Vertebrina.
   β Sides unequal.
+ Many apertures.
   Genus Polyostomella (Lamarck); Andromedes,
   Cellulina, Sporitus, Theneon, Pelorus, Geo-
   phonus, and Elphidium, (De Montfort).
   Genus Dendritina.
   Genus Peneroplis (De Montfort); Renuilina,
   Planelula, (De Blainville).
   Genus Spiroliana (Lamarck) including Lituus of the
   same author. 
+ A single aperture.
   Genus Robulina. (Phthirnum, Phaenamum, Her-
   rion, Clisipontes, Patrocles, Lamps, Ante-
   nor, Robulus, Rhinocerus, Spiterules; De Montfort.)
   Genus Cristellaria (Lamarck); Linthrias and
   Orea (De Blainville); Oreas and Scoritminus
   (De Montfort); Saracenaira (Defrance).

Cristellaria is divided into two sub-genera.
1. Cristellaria (properly so called). Shell de-
pressed.
   Genus Nonionina. (Macrotelites; Melonis, Cau-
   cris, Florulils, and Cbrisolus; De Montfort.)
   Genus Nummulina (Nummulites and Lentul-
   lina; Lamarck, Helicites; De Blainville.
   Nummulites, Lycothris, Rotaliis, Egeon;
   De Montfort).
Nummulina is separated into two sub-genera:
1. Nummulina (properly so called).
2. Anasina.
   Genus Siderolana (Lamarck). Siderolites (De Montfort).

Family IV. Les Agathistégues (Les Milliodes;
   De Fréirouzan).
   Genus Biliculina.
   Genus Spiricolus.
   Genus Tricolulina.
   Genus Articulina.
   Genus Quinqueloculina (Pollontes? De Mont-
fort).
   Genus Adelosina.

Family V. Les Entomostégues.
   Sides unequal.
   Genus Amphistegina.
   Genus Hotrostegina.
   * * Sides equal.
   Genus Orbiculina (Lamarck); Helenis, Ar-
   chaioa, and Nolus, (De Montfort).
   Genus Alveolina (Alveolite); Bonz. Oritzaire;
   Defrance. Borelius, Clausius, and Milliobis;
   De Montfort. Fasciolite; Parkiuson.
   Genus Fabularia (Defrance).

The following example will serve as a general illustration of the family.

FORBES, DUNCAN, was the second son of Duncan
Forbes of Culloden, near Inverness, where, or at anot-
other seat of the family, called Bunchrew, in the same neighbour-
hood, he was born 10th November, 1685. After studying
law for some years at Leyden, he returned to Scotland in
1707, and was admitted an advocate 26th July, 1709. At
the bar he rapidly gained employment and distinction.
For his first public appointment, however, that of sheriff of Mid-
lothian, he was chiefly indebted to the friendship of the
Argyll family. The rebellion of 1715 gave him an op-
portunity of displaying his zeal and activity in support of
government; and to his influence and exertions, and those of
his elder brother, who had now succeeded to the family
estate, the maintenance of the public tranquillity through-
out a great part of the north of Scotland at this crisis is
considered to have been mainly owing. His services were
rewarded the following year by his appointment to what
was then called the office of deputy lord-advocate, which
was similar to that of the present solicitor-general. In
this office he did himself as much honour by the high-minded
deliberacy which he showed in conducting the trials of the
persons charged with participation in the recent treason,
as by the talent, activity, and courage he had displayed
during the insurrection. The cry indeed that he was him-
self a disguised Jacobite was raised by the zeolites of the
government. In 1722 he was returned to parliament for
the Inverness burghs, for which his elder brother had pre-
viously sat. In the House of Commons, of which he con-
tinued a member for the next fifteen years, he of course
generally supported the minister, Sir Robert Walpole, as
his official situation implied. In 1726 he was appointed
For the last twenty years of his life, Forbes was regarded as a sort of lieutenant-governor of Scotland; but besides the power which he exercised through his official connection, he secured to himself a still wider influence by his public spirit, and his un wearied exertions in promoting the welfare of the country, in its trade, its manufactures, its agriculture, its fisheries, its roads, and every other department in which any prospect of romantic interest or value presented itself to his active and patriotic mind. 

'Thee, Forbes, too, Thomson, in his 'Autumn,' addresses him (pronouncing the name, it may be observed, in two syllables, as it is usually heard in Scotland),—

'Thee, Forbes, too, whom every worth attends,
As truth sincere, as sympathizing kind,
Thy truly generous, and in silence great,
Thy country feels through her reviving arts,
Planned by thy wisdom, by the soul informed;
And seldom has she known a Briton like thee.'

The most memorable public exertions of President Forbes, however, were called forth by the rebellion of 1745. In this emergency he certainly contributed more than any other man to keep the rebels in check until the government was enabled to meet them in the field with an adequate army. He was, of course, disengaged from the country, not only were his services never rewarded, but he was even refused any compensation for his actual losses and the expenditure of his private resources in the public cause. He had been attacked in his castle of Culloden by the rebels, who put an end to his life if he had fallen into their hands. It is said that his indignant sense of the ungrateful usage he met with broke his heart, and brought him to the grave. His death took place on the 10th December, 1747. He left an only son, by a lady whom he married in his administration, with whom he lost after a few years. President Forbes was a man both of extensive scholarship and of elegant accomplishments. Among other branches of learning he had cultivated an acquaintance with the Oriental tongues, and is said to have perused the Old Testament eight times in the original Hebrew. He is the author of the following pieces, which were published at Edinburgh in two volumes in 1744, soon after his death:—1. 'Thoughts on Religion. Natural and Revealed.' 2. 'Reflections on the Sources of Inherent Virtue.' 3. A letter to Hurd, writes, 'It is a little jewel; I knew and venerated the man; one of the greatest that ever Scotland bred, both as a judge, a patriot, and a Christian.' 4. 'A Letter to a Bishop concerning some important discoveries in Philosophy and Religion.' 5. To assist the authors Forbes are also attributed the elegant and well-known verses beginning—

'Oh! Chloe, could I now but sit
As unconcern'd as when
Your infant beauty could beg a smile,
Not hapless spot paint.'

His correspondence in relation to Scottish affairs, and especially to the Rebellions of 1715 and 1745, was published in a volume at London in 1816, under the title of 'Cul- doden Paper.' From the manuscripts of Duncan George Forbes of Culloden, Esq.' The above facts are stated on the authority of a 'Memoir' of considerable length which is prefixed to this publication.

Forbin, Claude, one of the most distinguished naval officers that France has ever produced, was born in Provence in 1756, and died in 1734. It is unnecessary to enumerate his various exploits against the English, Dutch, Swedes, and the British, in the Baltic and the Indian Sea, and in the commerce of the world, which have been recorded in the annals of France, and in many books both in French and English. It was, however, his capture of the island of Teneriffe, which gives him a remarkable circumstance in his life, of which he has left an account in his memoirs. We allude to the attempt which was made in the 17th century to introduce European civilization among the inhabitants of that country. The assault of the French was directed not only of the prime minister but even of the king himself, who on the death of the minister wished to appoint Con- stance in his place. He had the good sense however to decline the title, in order to avoid exciting the jealousy of the natives, and the resentment of the king himself, who was already possessed of all the power. The beginning of Constance's administration was successful, and notwithstanding many difficulties, the country began to improve under the administration of this able foreigner. He now conceived the plan of introducing, with the concurrence of Constance, the Christians, the Catholics, into Siam, but also into the adjacent countries, and with that view he persuaded the king of Siam to send three deputies to Louis XIV. The three deputies died on their way, but Louis having heard of the circum- stances, called for Forbin, by the Sieur de Pitrachu, to the Siamese monarch. The embassy was accompanied by some troops. It concluded a treaty of commerce, secured protection to the Catholic religion in Siam, and returned to France with an embassy from the king. Other attempts to introduce Christianity into Siam, and take some French officers and troops into his service, Forbin was appointed grand-admiral of the fleet, general-in- chief of the army of Siam, and governor of Bang-kok. The French troops were stationed in Siam, and the commander of the French troops destroyed all these brilliant prospects. A Siamese grandad called Pitrachu, taking advantage of the quarrels which divided the Euro- peans, united all their enemies against the French, and took him prisoner and declared himself regent of the kingdom. He compelled the French to quit the country, and put Constance as well as many other Christians to death. Forbin returned to Europe after a two years residence in Siam, of which he seems to have been heartily
tired. Forbin's memoirs were published, during his lifetime, in 1730, at Amsterdam, 2 vols, in 12mo. They are written with great ease, and his lively descriptions as well as the variety of events related make them exceedingly interesting. Forbin was distinguished for his disinterested conduct, and for the care he bestowed upon the establishment and sus-

cepting merit its just reward. The last years of his life were spent in retirement and devoted to religious exercises and works of charity.

FORCE, a mechanical term which, though it be suffi-
ciently understood in its common and popular meaning, requires some consideration before its strict and philosophi-
cal sense can be understood.

The term force always implies the existence of some cause which produces a visible mechanical effect. Thus, for instance, the throwing of a stone on a table (for it is not being supposed to exist) and let given equal weights (say each one ounce) be attached to them by strings and hang over the side of the table; then, suppose the two first weights to be 16 and 8 ounces, the pressures are in both cases the same, namely, 16 feet per second; but the

masses of matter moved are 17 and 9 ounces (for in both cases the moving ounce is part of the whole quantity moved).

The velocities at the end of any given time are found to be 

The pressure applied to different masses of matter (that is, to different weights of matter) during the same
time, produces velocities which are inversely proportional

3. The velocity of falling bodies is accelerated by 32'19 feet in every second: and in that proportion for all other

If then a pressure which is the same as that of a weight V produces motion in a mass of matter whose weight is W, during t seconds, then because the weight of V acting upon the mass of V for that time would produce 32'19 x ft of velocity, we have

V

P

W

V 32'19 x t must be or V = W 32'19 t

Hence, in different masses, the pressures necessary to de-

The pressure which will in one-hundredth of a second

When bodies are in motion, and with a continually vary-
ing velocity, it becomes desirable to consider their motion, not at all with reference to the masses which are moved, and solely with reference to the alterations of velocity which are produced. Thus if a feather and a cannon-ball move together in the same way, the force that is exerted upon the feather is the same in motive effect (upon the feather) as that which acts on the ball (upon the ball). It is customary to call this product of mass and velocity the mo-
deration or moving force of the body. [MOMENTUM.]

If a point move in a line in such a manner that x feet is its distance from a given point in the line at the end of the time t seconds, and if x be a function of t, then the velocity of the body (v) at the end of the time t is
\[
\frac{dx}{dt} \text{ feet per second, and the acceleration which that velocity is then undergoing is such as, if allowed to continue uniformly for one second would increase the velocity by } \frac{dx}{dt^2} \text{ or } \frac{d^2x}{dt^2} \times t \times t. \text{ Thus, if } x = t^2 + t, \text{ or if a point moves through } t^2 + t^2 \text{ feet in } t \text{ seconds, the velocity at the end of that time is } 2t + 3t^2 \text{ feet per second, and its acceleration is } 2 + 6t; \text{ or (for instance) at the end of 10 seconds the velocity (320 feet per second) is undergoing acceleration at a rate which would, if continued undisturbed for a unit of time, add 62 feet in that second; or at the end of the eleventh second, the velocity would be 382 feet per second.}
\]

If \( v \) be this accelerating force, we have then
\[
\begin{align*}
\frac{d^2x}{dt^2} &= \frac{dv}{dt} = \frac{dx}{dt} \times v; \quad nds = fdx.
\end{align*}
\]

These are called the equations of motion.

Any unit of time might be chosen instead of one second, but not without the following caution. Let \( g \) be the velocity generated by a force acting uniformly for one second: then \( 60g \) is the velocity produced in 60 seconds or in one minute. If then we measure the acceleration by \( g \), when the unit is one second, it might seem that we should use \( 60g \) instead of \( g \), when the unit is one minute. But it must be remembered that the minute has not the same meaning as the unit of time, and we must measure velocities by the spaces which would be described in one minute. Now, in the preceding, \( 60g \) means that the body, at the end of one minute, is moving at the rate of \( 60g \) feet per second; that is, at the rate of \( 60 \times 60 \)\( g \), or \( 3600g \). The measure of the acceleration, when both velocity and acceleration are referred to the minute instead of the second.

Referring to what precedes, we see that accelerating forces (or accelerations) are proportional inversely to the masses in which they are produced, and directly to the pressures which produce them. Thus the pressure \( v \) acting on the weight \( W \), produces \( \frac{Wv}{2} \times 38 \times 19 \) feet of velocity in every second.

The greatest difficulty in the way of the beginner is his liability to confound an increase of velocity with an increase of length described. He should carefully attend to the article ACCELERATION, by which he will see that a velocity uniformly increasing causes unequal spaces to be described in equal successive portions of time; while a uniformly increasing length described means a uniform velocity, or a velocity increased in a uniform manner.

FORCES, IMPRESSED AND EFFECTIVE. When various pressures act at different points of a system the forces which act upon any one point are not those which would by themselves produce the motion which that point really has, in consequence of the motion of the system. Thus suppose a pendulum with two balls, one above and the other (which suppose much heavier) below the point of suspension. The forces which act on the upper ball would, if it were free of the larger one, cause it to descend; while, in consequence of the connection of the two balls, the smaller actually does vibrate like a pendulum turned upside down, or as if its gravitating tendency were upwards instead of downwards. Here is an instance in which the impressed force acts downwards and the effective force upwards:

One of the most important principles in dynamics is that known by the name of D'Alembert, and is enunciated thus: the impressed forces are altogether equivalent to the effective forces in action. Hence it is the same as if the actual forces were always of an equal and contrary kind. That is, the effective forces are such as would (applied in contrary directions) prevent the impressed forces from producing any motion. This proof might be put into more accurate language, but it is in substance the one which is usually given. (Virtual Velocities.) FORCES, PARALLELOGRAM OF. Any two forces acting at the same point, and represented in magnitude and direction by two straight lines, are equivalent to a third force which would be impressed in that guide and direction by the diagonal of the parallelogram constructed with the two lines as its sides. (Composition.) This theorem is frequently called that of the parallelogram of forces.

FORCING, in horticulture, is the art of hastening the growth and maturity of flowers, fruits, and vegetables by artificial means.

Many of our finest exotic fruits are indigenous to warmer countries, and would scarcely ripen even in our warmest seasons; but by this art they are brought to perfection in cold climates, before they are advancced by the growing season of hardy kinds they also can be had in regular succession throughout the greater part of the year.

Although forcing to any extent is but of recent date in a country, it appears to have been practised in many countries at a very early period of time. Sir Joseph Banks, in the 'Hort. Trans.', cites some epigrams from Martial, to show that hothouses were not unknown to the Romans, and arrives at the conclusion that in all probability they were known and both vined and peach-houses, the former for the cult of glass, which is now commonly used. Pliny tells us that Tiberius, who was fond of cucumbers, had them in his garden throughout the year by means of (peculiariss) stoves, where they were grown in boxes, wheeled out in fine weather, and replaced in the stoves at night. (Plin. Hist. Nat., xii. 23); whence it may be inferred that forcing houses were not unknown to the Romans, though they do not appear to have been in general use. This branch of horticulture was almost unknown in Britain until the end of the 17th or beginning of the 18th century, and Lady Mary Wortley Montagu, on her journey to Constantinople in the year 1716, remarks the circumstance of pineapples being served up in the dessert at the electoral table at Misnovo, as a thing she had never before seen or heard of. Sir Joseph Banks remarks (in his 'Historia Naturalis Angliae', 1716), that vines had been grown in England, her ladyship, who moved in the highest circles, could not have been ignorant of the fact. It is said that the discovery of peach-forcing in Holland arose from an English gardener having, in a bad season when his peaches would not ripen, accidentally placed the sashes of a hotbed over them, which had the effect of ripening them. Even after forcing was practised to a considerable extent, its principles were so little understood, that fruit was frequently forced with the wrong side up, and the surface which was to become the summit of the fruit remained unripe. The discovery of this, and the subsequent experiments of Sir Joseph Banks, have been the real foundation of modern art and science in this department of the art. Newton's 'Principia' is one of the most important circumstances to attend to in the art of forcing. Nature is in all respects the best guide in these matters, and care should be taken to imitate her as far as possible; first, by taking care that forced plants are exposed to all the light that can be collected; and secondly, by preserving a due proportion between the quantity of heat and light to which forced plants are exposed; in other words, by not forcing too hard at a season when the sun's rays are least powerful, thus acting in direct opposition to the laws of nature. Attention to this is the commencement of the whole process. When early crops are more desirable than high-flavoured fruit, gardeners are obliged to apply heat without reference to the intensity of light; but if this is not the object, forcing should never be commenced before the spring, in order that the fruit may have the greatest degree of light when ripening. These principles are now generally understood and appreciated, and consequently our peaches, grapes, and other forced fruits are even superior to those grown under the clear skies of the south of Europe.

Mr. Knight, the president of the London Horticultural Society, recommends the temperature to be kept much lower during night than is generally done, and remarks, 'A gardener in forcing generally treats his plants as he would wish to be treated himself, and, consequently, although the aggregate temperature of his house be nearly what it ought to be, its temperature during the night relatively to that of the day is almost always too high.'
of his vineyard he always wishes the temperature in the month of May a hot day in summer to rise to 90°, and when the leaves of his plants are quite dry, he does not object to ten or fifteen degrees higher. But he most justly adds, that if this is accompanied by a high temperature at night, it exhausts the excitability of the tree much more rapidly than if it be slow and constant, and never requires the fruit, which is in consequence all supplied with nutriment at the period of its ripening, when most nutriment is probably wanted.

The same experienced author recommends the plants for forcing in the month of May, by previous treatment: as excitable as possible, which may be done by ripening the wood early in autumn, and putting the tree into a state of rest, ready to be roused into action by the application of heat.

It appears to be a general rule that plants from warm countries are very excitable and never remain in a state of preparation, while those of more temperate regions are impatient of artificial heat, and hence the difficulty of forcing the plants of northern climates; for example, the same degree of heat in which vines flourish would be much too high for fruits, and put on their blossoms after expansion without setting their fruit. The reason of this seems to be the following: each plant is adapted to the peculiar circumstances in which it is naturally placed; the natives of warm climates are accustomed to endure heat, and those of cold climates to suffer cold; and when these circumstances are reversed, those of cold countries being placed in excessive heat, and those of warm regions in unusual cold, the former are excited by too much and too rapid changes, and the latter can only endure a gradual change; the leaves have had time to organize matter to support them; and the latter, if they endure the cold, are not excited, and remain in a languishing unhealthy state. These reasons will at once show the extreme caution which is necessary in forcing the fruits of northern climates, and will at the same time suggest the treatment that plants of such a description require, and which both reason and experience agree in recommending to those who would be at all successful in the art.

Firstly, the increase of temperature must be slow and gradual, so that its highest point, or the Fahrenheit heat by artificial heat, must be freely introduced, particularly in fine bright weather, and the house so constructed as to admit of the greatest possible quantity of light, as, for instance, having movable lights which can be shut off and put on at pleasure.

The Dutch have long been celebrated as excellent forcing gardeners, and as their manner of performing the operation is peculiar, a description of it may be interesting.

The principal feature in their system is conducting the operation in a more gradual way, and getting rid of the soil before.

The trees employed in forcing are generally taken from a wall in the open air, planted in a rich border of leaf mould, and trained to a trellis a few inches below the glass; here they remain until they have ripened their fruit, after which they are taken back to the previous ground, and placed in the same purpose in some succeeding year; they never force from the same plant two years in succession. Their system of employing dung instead of fire heat gives them an excellent opportunity of forcing vegetables, such as French beans, cherries, lettuce, &c., which are either placed on, or plunged in, the bed in the inside of the frame.

Although pit and frame forcing is a peculiar feature in the horticulture of Holland, yet they have now, as well as in England, an elevated state of the art.

The Dutch plan of forcing is now practiced to a considerable extent in a number of gardens in Britain, particularly in that of P.C. Labouchere, Esq., Hylsy, near Chelmsford, of which a full account is given in the first vol. of his Hortus Imaginarius, and which he writes: 'I have read a good deal of the above subject, communicated to the Horticultural Society by M. Lindegaard, published in their Transactions, Series I, vol. v. The best information regarding the scientific principles of forcing is contained in the following papers scattered through the Transactions of the London Horticultural Society, and communicated by Mr. Knight and other scientific individuals. The best practical works upon the subject are those from the pens of Speckly, M'Phail, and Abercromby. The earliest mention of forcing is in given in London's Encyclopaedia of Gardening.'

FORD. A name applied to that part of a river where the water is sufficiently shallow to admit of wading through it, and thus crossing over without having recourse to a bridge, a ferry, or other similar means of passage.

Some rivers are never fordable, others are always so: in some the fords are temporary as to season, though permanent as to place, and in others they frequently change their situation. Rivers whose banks are steep and composed of loose materials are never fordable, except permanently too deep to admit of fording. Small and regular streams issuing from springs in flat countries are generally fordable at all times, and in all parts. The most common cases however are those of temporary and changeable fords. Of the first of these it is observable that when a river has once formed its bed in a soil of a certain degree of tenacity it seldom changes its channel, so that its shallows and deep parts remain constant, and, if the former permit of being forded, nothing but a rise of the waters renders the ford impassable. In the latter case it is very rare indeed which fall into the basin of which the river is the drain and the size of the basin itself, to which two circumstances the river is generally proportionate. If the basin be large and subject to frequent rain the fords will frequently be rendered impassable; if the rains be of long duration, the passage of the ford will be interrupted for a time proportionably long. The channel however remaining permanent the ford may again be passed as soon as the excess of water has flowed off. Such fords have generally been used long before they were organized, and when the water is low, they have sometimes found the ford impassable on arriving, hostilities for their temporary reception were constructed on the banks.

Such rivers as flow through a loose soil, as sand or gravel, have generally a very winding course and are constantly shifting their channel, that is, the deep part (which the Germans call the Theke) of their bed. These rivers though they present the greatest number of fords are constantly varying the situation of them, so that they are not only temporary as to season but also as to place. The rains by increasing the mass of water increase the strength and rapidity of the current, which is continually deepened, in an irregular manner. Banks also are carried away and others formed in parts that were before deep. Thus after every flood the place of the ford is changed.

In the case of torrent rivers, such as those of Italy, fords are very common, but they are seldom to be rendered suddenly impassable, or shifted, the waters rising with frightful rapidity to a great height and acquiring amazing force. They however soon subside, and, unless they have deepened the channel, cause no other inconvenience than a very temporary decrease in the velocity of the current.

In military operations fords are the greatest importance. The inhabitants on the borders of a river generally know where they are, but, as their indications cannot always be relied upon, particularly in an enemy's country, the fords must be considered to be the widest part of the river, or in the direction of the diagonal line that joins the salient angle of one side to the salient angle of the other side, as A B or C D.

In the first case the waters spread out in the water part of the bed of the river, and are therefore less deep; and in the second, there is always a deposit in front of the salient angles (as indicated by the dotted lines) and consequently the water is more shallow in those places than in the first. The rivers must therefore be considered as four degrees, the two which flow on each side, which are kept in check by the fords, and which it is necessary to swim.

Fords for infantry should not exceed the depths of three feet, and for cavalry that of four feet. These are the extreme depths, and if the current be somewhat rapid it is dangerous to ford through more than two feet water without assistance. Three or four horses can push the Terpsichore to the bottom, which must be fixed and even. Mud, weeds, or blocks of stones are great obstacles—loose sand is also bad as a ford for cavalry, for, being stirred up from the bottom by the horses it is carried away by the stream, and the ford thus becomes less rapid and the horses in some cases forced to swim. The opposite bank must also be easily accessible and clear, for it is useless to cross a river when, on gaining the opposite side, your further progress is impeded by rocks.
or impassable forests, thick brushwood, or swampy ground. Having discovered a ford, it is indispensable to mark its situation, and if some time should have elapsed previous to conducting the troops to it, the ford should be again examined in order to be sure that the waters have not risen, or that the enemy may not since have rendered it impassable. If, however, the hardships which may be endured and the considerations are necessary when the ford is to be passed in presence of an enemy, but these belong to a different subject.

FORD, JOHN, the dramatist, descended from a highly respectable family in the north-west of Devonshire, was the second son of Thomas Ford of Islington in that county. The exact date of his birth is not known, but Malavii's industry has fixed his baptism at April 17, 1586, as appears from the parish register of Islington.

During the second half of his age, he seems to have been of a turbulent disposition, and to have used his leisure to the best advantage. He was called to the bar, and entered at the Middle Temple, November 16, 1602; four years after which time he produced his first poem, 'Fame's Memorial,' an elegy on the death of the earl of Devonshire, dedicated to his countess, the beautiful sister of the fateful earl of Essex. This poem adds nothing to the author's present reputation, and all we gather from it are some hints of a disappointment in love, for the cure of which he had recourse to writing.

In addition to this mode of mental relief, he applied himself to the study of the liberal arts, of which he acquired the composition of plays, but he did not appear as an independent writer till 1598, when he published 'The Lover's Melancholy,' which was followed four years afterwards by 'Tis Pity She's a Whore,' 'The Broken Heart,' and 'Love's Sacrifice.' It is in the latter of these works that we find the first sign of the genius which he displayed in later life, and in 1638-39 he published two serious comedies, called 'The Fancies chase and noble,' and 'The Lady's Trial.' Besides these, he wrote in conjunction with Dee 'The Sun's Darling,' a moral mask, which was not printed till 1632, according to Langbaine, or 1658 according to Gifford.

Nothing more is known of Ford; but from some obscure traditions it has been supposed that soon after 1638 he retired to his native place of Islington, and there spent the remainder of his days.

In the plays connected with many fine thoughts, and numerous specimens of harmonious versification, apparently the result of considerable labour. One fault into which he has fallen in common with others his contemporaries, that of killing off all his dramatic persons at the end of the fifth act, appears to arise from an overstrained desire of completing and perfecting the action of the play. Forgetting that the end of every drama is to represent a certain crisis in the affairs of one or more of the principal persons, he endeavours to make the fortunes of himself and those who sympathize with him, as well as the disaster of his enemies, more or less, be brought together in a similar ruin. This is very much the case in 'Tis Pity She's a Whore and 'The Broken Heart' in the latter, as much from the intricacy of the plot as from another cause.

His work is, we think, 'Perkin Warbeck.' It has an air of repose throughout which we do not see in Ford's other plays. The device too of making Perkin believe in the justice of his own claim is highly ingenious; besides which the characters of Huntleigh, Katharine, and Dalby, are excellent, that the whole effect of the play is the more much like what is called Shakespear's second manner. Here however, as in all Ford's dramas, we want Shakespear's clowns and fools. There is nothing of nature, or even of genial humanity, which is so much felt and affected by the characters in 'Perkin Warbeck,' but he is, to speak in the most favourable terms of him, very much overstrained. It is in melancholy passages and love scenes that we must look for Ford's peculiar excellence, and if the characters of Antonio and Scalican are not more fully sustained throughout, 'Tis Pity She's a Whore would probably have been Ford's most perfect tragedy.

(Langhame's Dramatic Poets, p. 219; Winstanley's Engl. Poets, p. 114; Gifford's edition of Ford.)

Ford's knowledge of Scottish history, is believed to have been a canon of Aberdeen, and to have been born in the parish of Fordun, in the Mearns, in the early part of the fourteenth century. He probably died in the year 1386, or very soon after. His history, as far as compiled by himself, is in five books, and comes down to the end of the reign of David I. (A.D. 1153): it begins at the creation, the first chapter being entitled 'De Mundo sensibilis, terrae scientia et eius quatuor mundi principali--bus, orientali, occidentali, australi, et septentrionali,' and a great deal that immediately follows, being rather a treatise on cosmography than a chronic or history. But, in addition to the five books, he left materials for bringing down the narrative to a.D. 1385, which were put in order by Walter Bower, abbot of Dunfermline, who, as he tells us himself, was born in that year. Bower also continued the history to the death of James I. (A.D. 1437), the whole work being thus extended to 16 books. Fordun states that he spent much time in collecting the materials for his history, both by inquiry and travel; and he appears to have made diligent use of all the sources of information that were accessible to him. He has undoubtedly preserved many facts which otherwise would have perished. Although by no means free from the credulity which belonged to the age, he deserves to be considered as, by common reason, both an honest and a sensible writer: the mythology of the Scottish history appears in a much simpler shape in his account than in the hands of his successors. The five first books of Fordun's work were first printed under the title of 'Joanna Forduni Scotiae,' in the Scotorum Historia,' in Gala's 'Historiae Britanniae, Saxoniae, &c. Scriptores xv.' (commonly referred to as the first volume of Gal's collection) fol. Oxon., 1691, pp. 583-701. The first complete edition of the work was published by FORDUN, at Oxford, in 1615, under the former title of 'Joanna de Fordun, Scotichronicon.' A more complete and accurate edition appeared at Edinburgh in 1739, in 2 vols. fol., entitled 'Joanna Forduni Scotichronicon, seu Scriptores et continuatio Walteri Boweri Inulsi Sancti Columbilli regi.' Some copies of this publication are said to have a different title page, with the date 1775. Of Goodall's performance Pinkerton ('Introduction to Inquiry into History of Scot- land') says: 'A laudable work, but his introduction is another violent piece, fraught with contemptible prejudice, small reading, and gross error. He talks like a master who he is not even a scholar, and dreams he knows everything where he knows nothing.' Many manuscripts of Fordun's work exist, but the chief of these is the 'Scott' of the title is joined in one word with the 'Chronicon,' and not placed separately as an annexation to the author's name, in the manner in which it is printed by Gal.
FOREST

An extensive tract of ground overgrown with trees alone, of one or several species, or with trees and underwood.

Forests are not only highly interesting in themselves, but are of most extensive importance, whether as regards their influence in the general character of the climate; as supplying to men those necessary articles, timber and fuel, besides a variety of nutritious, medicinal, and tintorial plants; or finally, as affording shelter to wild animals, which finding in them both food and security, have been made: In passing over a few of the forests which cover so immense tracts of the earth's surface, the first thing which strikes us is their variety. In one place they are composed of palms, in another of oaks, and elsewhere of pines and larch trees, &c. We are next surprised at the difference in the situation, for we find collected together trees of the same kind; palms in America, in Africa, and in Asia; oaks and pines in Russia and in Mexico, in plains and on mountain tops. A little consideration however will satisfactorily account for this. Trees, like other vegetables, reside according to their several natures, and independent of suitable soils, different modifications of heat, light, moisture, and atmospheric pressure; circumstances which, so far from being influenced by latitude alone, are much more dependent upon height above the level of the sea, its vicinity and other circumstances, than upon proximity to or distance from the equator. Hence, not only do we find particular kinds of trees associated in those regions which are most conducive to their proper development, but as we find their climate changeable in the same parts of the world, so do we find them producing vegetation of similar character, and thus, though the tundru zone has forests peculiar to itself, we there find also, but at different heights above the sea, the forests of what are termed the temperate and frigid zones, which are altogether remarkable and not easily accounted for, that, although the same trees seem to require similar climates, these climates do not always give birth to the same kind of plants. The climate of many parts of the mountainous region of the tundru zone is similar to that of the frigid zone, and yet Humus, and indigenous rose-tree in all South America, and this shrub is entirely wanting in the southern hemisphere. Heath is peculiar to the old world, for out of 137 known species, not one is found in the new continent from Pennsylvania and Labrador to Nodaka and Alaska: and the greater part of our European forest-trees, even the hardest, disappear towards the Tobol and the Irtysh. They do not grow in Siberia though the climate is the same. The oak, the hazel, and the wild-apple are not found from the Tobol to Daouria, and the stunted appearance of the clouds of the Argoun and the Amur, and the last is again found in the Aleutian islands.

According to Humboldt, whether we ascend from the plain of Oratavia to the top of the Peak of Teneriffe, or from the latter to the summit of the Mexican Andes, we find different zones of vegetation, in which the succession of forest-trees follows generally, the same order that is observed in passing over the surface of the earth from the equator towards the poles. Raymond also, in the Pyrenees, and Tournefort, in Mount Ararat, found in ascending these mountains, the same succession of trees as exists in passing from their particular latitudes towards the frozen regions. From this fact it has been rather rashly concluded, that certain heights correspond in the nature of the climate, and the same latitudes, and nearer strictly the case, nor is the succession we have mentioned absolutely that observed in proceeding from the equator northward. The extreme heights at which certain forest-trees vegetate in the Andes are different from those at which the same trees are found in the Pyrenees, and while the bird is nearest the snow in Lapland it is succeeded in the Alps by the pine. These anomalies are explained by a difference in some of the elements of local climate, and by the probable fact of particular primitive distribution. It is also remarkable, that in some cases forests are composed solely of some particular tree. Thus, in Lapland there are extensive forests of birch without a single tree of any other kind, and without underwood. In Mazovia also are extensive forests of nothing but birch. In Norway, Sweden, and Finland many forests consist exclusively of pine. Asia has whole woods of nothing but coccus, &c.

Our European forests, generally considered, are composed chiefly of oak, elm, ash, beech, alder, poplar, willow, plane, beech, and lime, together with interspersed wild-apple, pear, cherry-trees, dogwood, hornbeam, and service-tree; the underwood being hazel, elder, buckthorn, viburnum, dogrose, &c. Yew and holly are the evergreen of our woods, and among the numerous different species of the pine and fir, the cypresses and the juniper.

Forests of Great Britain and Ireland—The British Isles are, like other countries of Europe, were in former times much more abundantly covered with forest timber than they are at present. The increase of population tends to the destruction of forests by causing a demand for the production of arable land; and this, together with the gradual expenditure of wood, when it is abundant, and the general and long-continued neglect, have, in many places, caused the remaining trees, which were once the chief causes of the great diminution of wood. But though we have now hardly any forests of considerable extent, there are several countries over which timber is more equally distributed, that is, in those counties where the soil and aspect favor to its growth. Woods of small extent, copses, clumps, and clusters of trees are very generally distributed over the face of the country, which, together with the timber scattered in the hedge-rows, constitute a mass of wood of an immeasurable extent, and the value of which, as the boundaries of the counties are not precisely marked, cannot be ascertained.

In Herefordshire, Warwickshire, Northamptonshire, and Staffordshire is abundance of fine oak and elm woods. In Buckinghamshire there is a quantity of birch and oak, and also fine beech. Sussex, once celebrated for the rare and quality of its timber, has yet some good stands of woods, besides large plantations of plantations, including coppice-wood, over 17,000 acres. Essex, with 50,000 acres of woodland, has some elms and oaks. Surrey, Hertfordshire, and Berkshire abound in coppice-woods. In Worcestershire a stand of oak and beech, and in the county of Wharfedale, Stokechurch, chiefly of beech, some oak, ash, birch, and iuspen. Berkshire contains a part of Windor forest; and Gloucestershire, the Forest of Dean, so that these three last counties are extensively wooded. But we cannot speak of the value: in any extent, but the hedges and timbers are so abundant as to give the whole country, especially when seen from an elevation, an appearance of a vast forest. Of the remaining counties some have very little, and a few acres and plantations, and of the value of timber have given rise to a great many forest plantations. In Wales particularly, there is a large planting. In South Wales alone six millions of acres, as they are, are annually planted: if that is the case, one-third of the whole country is nothing, or the whole country would be one entire forest.

Scotland has few forests of large timber, but we except the woods of Inverness-shire and Aberdeenshire. In the former of these counties the natural pine-woods exceed the size of those in the rest of Great Britain. Strathclyde alone has there 15,000 acres of natural fir; and in other parts the woods are reckoned in miles, not by acres; there are also oak woods and extensive forests of birch. In Aberdeenshire, in the higher districts of Mor, there are 100 square miles of wood and plantations. The pines of Braemar are magnificent in size, and are of the finest quality. Argyllshire, Dumfartons, and Stirlingshire have many thousands of acres of coppice wood, and, with a very few exceptions, the remaining counties have very few. But however, large stands, having not been the practice in the past, the want of wood however in this country, is far as it is employed for fuel, is little felt, in consequence of its extensive bogs, which furnish an almost inexhaustible quantity of peat.

Upon the whole then, though Great Britain and Ireland do not now possess any extensive forests, still there is a considerable quantity of timber, and the extent of ages...
plantsations seems to promise that we shall never be wholly destitute of so essential an article as wood. According to it, cut down, that Britain and Ireland timber to the amount of 2,000,000l.

If from our country we pass over to the continent of Europe, we shall find forests of much greater extent, particularly in the north-east.

Among the northern part of this country the mountains are covered with wood; birch, maple, pine, and fir, forming immense forests; the forest, sometimes attaining a height of 160 feet, is in great estimation for masts and building timber: in the regions of moderate elevation is seen the good land of these forests that extend as far as Drontheim, in 63° north latitude.

The forests of Sweden are similar to those of Norway. In the damp places there grows in abundance the alder-leaved willow (Salix amygdalina).

Denmark—Of this country it may be remarked that Jutland, once covered with thick forests, has now only a few long slips on its eastern side. Holstein has very little wood. The island of Funen has some small woods, as also Seeland, in that part of it which borders on the Sound. Palster is well wooded, and Bornholm has a good deal of birch. In all, Denmark possesses about 130 square leagues of wood, chiefly birch; there is also ashen, alder, and oak, but pine and fir are scarce.

Holland possesses timber, though not in very great quantity. But there is, in the whole of the beech, fir, poplar, and ash; willow grows along the canals, and the coppices are of maple, ashen, hornbeams, birch, and beech, with a slight portion of oak-bushes. In Guelder-land there are plantations of many miles in extent of fir and Weymouth pines. There are, however, one hundred acres have been sown with beech. At Rhemmen there are thick woods, as also at Arnhem; and many plantations have been formed on the upper Yssel of fir, pine, oak, beech, and birch.

Germany is so well wooded that the forests are estimated to be one-third of the whole extent of this country. In the north of Osnabrick, is about thirty-two miles long and twenty broad. These woods, in which there is abundance of the finest oak timber, are stocked with awne, and furnish the hay so generally esteemed over all Europe. In the west, woods are also stocked. Near Hanover, there are near 300,000 acres. Saxony is also abundantly supplied with forests and plantations. Hess Cassel has about a million of acres of wood, and the Rhenish provinces are amply supplied with timber. Prussia possesses about 18 million acres of forest, with more than two millions of acres in the whole of the forest. The plains are in some consider this estimate too large. In Hanover are some fine groves, and a quantity of limes and willows planted in rows. This kingdom also includes about three-fifths of the Han forest. In Westphalia there are very extensive forests, and the extent of the forest of Arnschot is about fifty miles long and forty miles broad. On the west of the forest, the woods are also stocked. The wood 20 miles in length. The banks of the Oder are well furnished with fine oaks, as also pines, birches, and willows, of extraordinary dimensions; elms do not thrive. In several places the roads for miles are bordered with poplars, and there is abundance of flourishing plantations. Juist possesses forests of all the trees common in Germany; they are regularly cut, and furnish upwards of 270 millions of cubic feet of wood, of which, as it greatly exceeds the consumption of the country, a considerable part is exported. The principal forest of the Oder is in the lower Holstein, before the name of which is Bommerso, and of the Spreest, and of the Hohenloh, which is chiefly of the Scotch pine (P. sylvestris).

In the maritime part of the Besigue provinces there is nothing but the miserable pin de lasun. In Biscay beech only is cultivated; but in Galicia and in Catalonia there are many oaks and beech. In Estremadura there are forests of different kinds of pine, such as the F. Hispanica, or Spanish pine, and the Apleo pine (P. halepensis). The Apleo pine grows in considerable quantities in Catalonia, and in the western part of Andalusia is a forest of the stone pine. The pine forest of the Sierra Nevada, and are part of the Carpathians, is chiefly of the Scotch pine (P. sylvestris). In the maritime part of the Besigue provinces there is nothing but the miserable pin de lasun. In Biscay beech only is cultivated; but in Galicia and in Catalonia there are many oaks and beech...
side of the chain the forests are particularly varied. Different kinds of pine and fir, oak, maple, sycamore, walnut, chestnut, and beech, are found in succession on the same mountains, and the forests of oak, elm, and lime, abound. The Morea produces the cork tree, the Kernes oak, the Vallonka oak, of which the acorns are eaten, the plane, the wild olive, the sweet chestnut, the mulberry, pine, fir, and the harch, the barren date tree, the willow, cypress, &c., and a variety of plants used in the arts, and in pharmacy.

Russia.—Of all the countries of Europe, Russia is the most abundantly provided with timber; and her forests would be an almost inexhaustible source of wealth, if it were not for the Government effectually to prevent them from destruction. In 1802 regulations for the preservation of the forests were established, but such is their extent and that of the country, that it is next to impossible wholly to prevent the waste of wood.

Her Majesty's Visit of the Agriculture of Russia, published in the 8th vol. of the 'Memoirs of the Academy of Sciences of St. Petersburg,' and quoted in Mr. Schinzler's late work, states, 'there are still 200,000,000 of acres exclusively covered with pine and other cone-bearing trees, without counting oaks, maples, beech, poplar, and hornbeam, eleven of which are scarce below the latitude of 32° and birch, which grows further north.' In the year 1804 it was estimated that there existed 8,192,295 pine trees fit for manure, with a mean diameter of 18 inches, and 572,806 oak, with a mean diameter of 24 inches and upwards in diameter; about 87,000,000 more pines were proper for building timber. Enormous as this may appear, the statement, so far from being exaggerated, would seem to be considerably below the truth, it being certain that the pines of the western government of Archangel, and Olenetz, there are 216,000,000 acres of forest trees, chiefly pine and fir. Birch, pines, fir, and limes, are the common forest trees of European Russia. The first is the most abundant as far as the 55th parallel, beyond which there are but few vast forests, and fir, the most valuable, and the governments of Novgorod and Tever are covered with wood; the Volkskoy forest is the largest in Europe. In the government of Pern, of a surface of 50,000,000 of acres, 47,000,000 are covered with forests. Many of these important trees of wood are immeasurable, and labour great quantities of bears, wolves, and other savage beasts, while others abound in deer and game of all kinds. In Estonia, Lithuania, Livonia, and Courland, there are fine forests of pine, fir, and birch, the latter predominating in the plains, and limes, elms, oaks and hornbeams planted in the sandy soils, but oak is in general scarce. In Courland lime is abundant, but beech is rare; there are willows of several varieties. In general it may be observed, that in Russia, the larch and willow are especially abundant. They are found to the north of 65°, and in the Valga they are fine and abundant at 55°. In the same region where the commoner woods, hollands of timber (dere tartarum) are in abundance, as also white poplar and hornbeam. In the central provinces beech hardly reaches Smolensk, and does not pass beyond Lattice Russia. In some parts of the Ukraine are fine oak forests. In Lithuania the timber is generally fir, intermixed with lime and birch, and occasionally oak.

Poland, generally speaking, is covered with magnificent forests; and we are particularly told there are some very fine woods. The different varieties of the pine are found in the sandy places, and on the mountains are fir and beech. Oak succeeds well in good soil. In addition to these trees Poland also possesses larch, lime, elm, and ash. In the Bukowina there are forests of beech, intermixed with fir and birch woods.

It appears then, that although the progress of civilization and increase of population have greatly diminished the forests which at one time covered great part of Europe, there is still an immense quantity of wood, and the necessity of keeping up a constant supply being now very generally acknowledged, there is reason to hope that the forests will no longer be abandoned to wanton destruction, but that, on the contrary, the cutting of timber and cutting of coarse woods will be properly regulated, and fresh plantations made to replace the wood consumed.

We will now take a hasty glance over other parts of the world.

Asia Minor.—In the Caucasus we find that on the western, eastern, and southern slopes of this chain, there are forests of cedar, cypress, juniper, beech, and oak, and on the edges of those, quince, wild apple, and pear trees, while the warm and sheltered valleys produce the almond, the peach, and the fig. On the borders of the Caspian there are woods of olive, plane, and laurel.

Asia Minor, Mount Taurus is covered with forests of cypress, juniper, and sycamore. The gulf-nut oak grows from the Bosphorus to Syria, and the Persian frontier; oaks and hornbeams abound in the Black Sea. There are also in different parts woods composed exclusively of fruit trees. Syria, to a vegetation greatly similar, adds the sycomore and palm trees.

Arabia has no forests, properly speaking. The Oases, however, are well wooded with date palms, tamarisks, and different fruit trees. In Hejou the date palm is abundant.

Persia.—In Mekran there are forests of the Indian palm intermixed with the odoriferous shrubs of Arabia Felix. In the valley of Shiraz we find only clumps of plane trees, black and white fir, Sibipolar; but the mountains which border the Caspian are covered with oak, lime, acacia, chestnut, and higher up, cypress, and other pines, with the sycamore and the mountain ash. Ghilan abounds in boxwood, and on the south-east of the Caspian there are groves of the most ancient oaks.

Siberia is too cold for the oak, the hazzle, the elder, the plane, and the wild apple; even the ash ceases towards the Irish; and the fir, which in Norway grows as far as 70°, stops in Siberia at 60°, while the silver fir goes no further than 10°. The spruce, pine, larch, and fir, of the great forest of West Siberia, in the territory of Archangel, and Olenetz, there are 216,000,000 acres of forest trees, chiefly pine and fir. Birch, pines, fir, and limes, are the common forest trees of European Russia. The first is the most abundant as far as the 55th parallel, beyond which there are but few vast forests, and fir, the most valuable, and the governments of Novgorod and Tever are covered with wood; the Volkskoy forest is the largest in Europe. In the government of Pern, of a surface of 50,000,000 of acres, 47,000,000 are covered with forests. Many of these important trees of wood are immeasurable, and labour great quantities of bears, wolves, and other savage beasts, while others abound in deer and game of all kinds. In Estonia, Lithuania, Livonia, and Courland, there are fine forests of pine, fir, and birch, the latter predominating in the plains, and limes, elms, oaks and hornbeams planted in the sandy soils, but oak is in general scarce. In Courland lime is abundant, but beech is rare; there are willows of several varieties. In general it may be observed, that in Russia, the larch and willow are especially abundant. They are found to the north of 65°, and in the Valga they are fine and abundant at 55°. In the same region where the commoner woods, hollands of timber (dere tartarum) are in abundance, as also white poplar and hornbeam. In the central provinces beech hardly reaches Smolensk, and does not pass beyond Lattice Russia. In some parts of the Ukraine are fine oak forests. In Lithuania the timber is generally fir, intermixed with lime and birch, and occasionally oak. The woods of the latter province harbour bears, elk, &c, and in the celebrated forest of Bieboifie is found the bison, a species of Ursus.

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the camphor-tree, which furnishes the best and most beautiful timber, the paper and other mulberries, the tallow-tree, the bamboo, &c. The provinces of Kiang-si and Quang-si have also their mountains covered with forests, and in the latter province there is cinnamon superior to that of Ceylon.

The islands of Formosa and Hainan are abundantly wooded, producing, besides timber, several woods remarkable for their perfume, and others of great value for carving, as eagle-wood, violetwood, and a multiplicity of woods of remarkable beauty, said to be incorruptible. Returning to the continent of Asia, we find Tibet, having the bases of its mountains girdled with forests of bamboo, aspen, birch, cypress, and yew, and ash and mountain-ash, and fir and low and stunted.

Cashmere has abundance of oak.

India, both within and beyond the Ganges, is rich in wood. There are whole forests of the bamboo, which sometimes attain a height of 60 feet. Cocoas-nut and palms of all kinds exist. A peculiar species of tea is grown in the valley of the Brahme, cypress, and poplar; there are mangoes, banana-trees, uvarias, robinias, sandal-wood, &c. Guzerat, Oudepoor, the kingdom of Assam, Bengal, along the coast particularly, the mountains of Tipra, and Malahar abound in wood; the latter is the most remarkable. The immense forests of the last-mentioned valuable tree, together with white sandal-wood, eagle-wood, iron-wood, ebony, sycomore, Indian fig, fanpalms, bignoniaceae, coconas, and sagopalm, are also fine grained orange, and sweet holz.

The kingdom of Timbouk, Cambodias, Siam, and the peninsula of Malacca, have a nearly similar vegetation. Ceylon is also well wooded with Asiatic trees and shrubs: among the former are the ebony and satin-wood, and of the latter the sandal-wood is the most remarkable.

Of Oceania it is sufficient to say, that all the islands are more or less abundant covered with timber; many produce trees of immense size, and of the finest wood, while others furnish the most valuable gums, drugs, and spices. Australia, as far as is known, is not thickly wooded; it produces mahogany, but the forest-timber of this island is said to be brittle, and generally of bad quality.

Borneo is remarkable for the growth and quality of its timber, and the great perfection to which the camphor-tree and sarsaparilla have been carried.

Africa. With the exception of the wide-spread deserts and sandy tracts of this part of the world, and in spite of the burning heat of a vertical sun, there are spots which, by reason of their elevation or their proximity to the sea, enjoy a sufficient rainfall and soil to produce rich and abundant timber; these places vegetation is rich beyond description. Thus Senegambia, Guinea, and Congo are covered with forests, which consist of the baobab (of which there are different kinds, though only one seems to have been described), of palm-trees, date-palms, nipa, tamarrindas, intermixed with bananas, oranges, limes, and pomegranates; there are also coco-nut trees in great abundance. The tamarrind and cedar, which grow in the greatest profusion on the borders of the Congo, furnish timber of the finest quality. Agep trees have arrow-woods, now fir, cypress, and poplar; there are mangoes, banana-trees, uvarias, robinias, sandal-wood, &c. Egypt, though abounding in plantations of fruit-trees and dates, has no forests. The Atlas mountains, on the contrary, are covered with magnificent forests, equal to the finest in Italy, and producing a variety of oaks, the mastice tree, the cypress, &c. In the interior of the Atlas, the environs of Borgou are said to be covered with trees, among which are several kinds of sycomore, palms, and the mimosa indiasica. The kingdom of Borgou has immense forests, and the date-palm abounds here. The Cape, celebrated for the beauty of its scenery, is highly thought to be deficient in forest-timber, but it has been discovered that, to the eastward, there are forests of the finest oak of the Albanian kind, celebrated for its quality and durability. These forests also produce iron-wood, the sago-palm, &c. The Province of Judwood is a forest region. Of the African islands, Madagascar is rich in timber, and a variety of woods useful in the arts; the same may be said of the islands on the west coast, they are generally well wooded.

America is, of all parts of the world, the most thickly covered with wood. Beginning with the north, we find the Russian territory on the north-west coast abundantly stocked with fine timber: pines 300 feet high and 45 feet in circumference, Canadian poplar, alders 40 feet high below the branches, birch, yew, black and common oak, American ash, sycamore, sugar maple, cypresses 34 feet in circumference, and willows. The islands on this coast have also magnificent forests of pine and other lofty trees.

In New Britain the forests are extensive, but they present little variety, and in some parts, to the northward particularly, the larches and birches are stunted in their growth. The environs of Lake Winnipeg are covered with the trees common to Canada.

In Greenland there are only a few stunted willows and birches; and Labrador has merely some pines and pinasters in the valleys.

Canada contains immense forests, though the trees are neither so large nor of such vigorous growth as in the United States. Of the latter, the most abundant, after which come the red and the sugar maple, the birch, the lime, the American elm, and iron-wood, the yew, the common and the mountain-ash; also a great variety of oak, different from the European species, which does not thrive here.

New Brunswick has large forests of fine timber, particularly pine, which it exports.

Nova Scotia produces good oak, but the principal wood is pine, fir, and hemlock.

The island of Cape Breton furnishes immense oaks and magnificent masts. Newfoundland, and the other islands at the mouth of the St. Lawrence, also produce timber fit for naval and other constructions.

The United States are abundantly wooded, the cleared land even in some of the Atlantic states being inconsiderable when compared with that still covered with the primitive forests, which contain an immense variety of trees. There are about forty different kinds of oak, fourteen of pine, besides cedar, cypress, and larch; several kinds, among which is that from which sugar is obtained, birch, beech, iron-wood, hornbeam, hickory, wild-cherry, and apple, mulberry, poplar, willow, magnolias, elm, chestnut, &c. Of all the states, Ohio perhaps contains the finest groves of trees. The large eucalyptus, or gum-tree, of great size, exhibiting the productions of both the north and the south. Thus there is red and white pine, evergreen oaks, chestnut, mahogany, walnut, cherry, maple, logwood, Brazil-wood, and sassafras. There are also in Florida great and white pines, as well as mulberry, the finest in America. All European fruits also grow here, and the oranges are finer than in Portugal.

In Mexico or New Spain there are abundant forests, differing in character according to their position on the mountains or in the valleys; the pines are extensive and of great height, the firs and hemlocks of high mountains; the oaks, elms, sycamores, and maples are found in the lower regions. There are large and fine woods of mahogany, which are used for the construction of vessels.

Yucatan is famous for its logwood and mahogany; the latter is also produced in great abundance round the Bay of Honduras.

Nicaragua has groves of palms which attain an immense height; and in Costa Rica and Paraguay there is fine forest timber.

The West India Islands generally abound in wood, though there are exceptions.

In South America the Caracas possesses inestimable forests, which, besides the finest timber, produce also a great variety of beautiful woods for cabinet-work, dye-woods, drugs used in the arts, and medicinal plants, as the sarsaparilla, &c.

The New Orleans, the plateau of Bogota, Popayan, and Pasto have fine forests. The neighbourhood of Guayasqui, besides the common timber of the country, possesses a wood remarkable for strength and solidity, which is said to be incorruptible, and to resist worms better than any other; and the colonies which render it invaluable for the keels and ribs of vessels.

Peru is rich in forests, which furnish timber, gums, resins, dye and cabinet-woods, all of the finest quality.

Chile possesses forests of gigantic trees, many of incorruptible wood, and others useful for their gums, resins, &c.
Pines and cedars are abundant. The whole chain of the Andes abound in wood, varying in kind according to height, latitude, and aspect. The vigorous vegetation in some parts is so dense as to be insurmountable; thus in Chile trees have been found so large that an entire church, 60 feet long, with all its wooden appurtenances of doors, windows, &c., has been built of a single tree. The same country produces apples as big as hogsheads, and pears weighing 100 pounds.

The Magellanic birds, on the west or mountainous part, contain forests.

Paraguay is rich in wood, on the borders of the upper Urugua; and, among other trees, produces in abundance the 'quicksilver-bois,' a term derived from its peculiar utility. Brazil contains extensive forests, which cover immense tracts, and are composed of palmas, Brazilian cedar, littered with the Indian, together with an endless variety of other trees peculiar to the country; some of these are of extraordinary dimensions. The Brazilian pine furnishes very fine mass; this country exports a large quantity of timber, and supplies all the Portuguese shipping. At Balta ship-building is carried on to a great extent. Brazil also produces the dye-wood which bears its name.

Guiana has extensive forests in its higher parts, but the wood of many of the trees is so soft as to be only good to burn, and that of others is too hard to be worked. It produces many dye-woods.

The forest region of the river Amazon and of the upper Orinoco is extensive, and Humboldt covers an area of about 719,000 square miles.

From the above rapid sketch of the forest lands of the globe it appears that they still cover a great portion of its surface, nor can it be doubted that the immense tracts of wood which exist, and exercise a powerful influence on the physical economy of the earth. This influence is both direct and indirect. The direct influence of forests is the diminution of temperature, effected, according to Humboldt:— 1. By screening the soil from the heat of the sun; 2. By the diffusion of moisture from the leaves; and 3. By the immense surface which these same leaves offer to the cooling process of radiation. This however only a partial view of the subject, and it is considered more fully under another head. The indirect influence is that of the circulation of moisture by which the fertilizing rivers of the earth's surface are furnished with a permanent supply of water. Such indeed is the importance of forests in this respect, that if it were possible to annihilate at once all the forests and extinguish a very powerful influence on the physical economy of the earth. The rains which fell in the mountains, no longer arrested by the trunks and roots of the trees, would not have time to percolate through the soil and fissures of the rocks to supply the reservoirs of springs, but would pour off more rapidly and in such torrents as courses dry as soon as the rain had ceased. This, in a limited degree, has been already experienced in places where the heights have been partially denuded of their forests; and its effect on the rivers in some parts of the United States where the portion of cleared land is considerable, is distinctly observed. Nor would this be all: lakes, for want of supply, would soon be dried up, and as no waters but those of the ocean would then exist, the atmosphere would be deficient in moisture; no vegetation could exist, and the earth would no longer be habitable. The rains which fell in the mountains, no longer arrested by the trunks and roots of the trees, would not have time to percolate through the soil and fissures of the rocks to supply the reservoirs of springs, but would pour off more rapidly and in such torrents as courses dry as soon as the rain had ceased. This, in a limited degree, has been already experienced in places where the heights have been partially denuded of their forests; and its effect on the rivers in some parts of the United States where the portion of cleared land is considerable, is distinctly observed. Nor would this be all: lakes, for want of supply, would soon be dried up, and as no waters but those of the ocean would then exist, the atmosphere would be deficient in moisture; no vegetation could exist, and the earth would no longer be habitable.

Beasts of war are such as hares, conies, and roes; fowls of war, such as the partridge, quail, pheasant, woodcock, mallard, heron, &c. Afterwards however quotes a decision of the justices and the king's council that roes are not beasts of the forest, because they put to flight other wild beasts (ex quod fugant alia foras), which seems an odd reason; perhaps the word should be 'fugant' (because they fly from other wild beasts). And be added, 'beasts of forests are properly hart, hind, buck, subject, but legally all wild beasts of venery.' (Co. Litt. sec. 387.)

For the antiquity of the royal forests in England, 'the best and surest argument,' says Coke, elsewhere (4 Inst. 319), 'is, that the forests in England, being sixty-nine in number, except the New Forest in Hampshire, were held, in the time of the Conqueror, and Hampton Court Forest, by Henry VIII., and by authority of parliament, are so antient, as no record or history doth make any mention of their origin or beginning.' Yet it appears, both from the great deficiency of records in those early times, and from the nature of the copyhold tenure, that the king, before the reign of Stephen, that some lands had been aforested (as the term was) after the time of the two first Norman kings. 'The forests,' says Stephen, 'which King William my grandfather, and William II. my uncle, made and held, I preserve.' Henry II. made but four new forests; and Stephen appears to render up and concede in quiet to the churches and the kingdom. And one of the concessions demanded from John and granted in Magna Charta (§ 47) was, that all the lands which had been aforested in his time should be immediately desforestied. No additional forests appear to
have been made from the reign of John till that of Hampton Court was constituted by act of parliament in 1359 (31 Hen. 3). The later advancements, however, were those of the Ten Commandments, to which the forests, although after a quiet possession of three or four centuries. This accordingly was one of the grievances to which the Long Parliament directed its earliest attention. One of the Acts which that assembly passed in its first session entitled 'For the Enforcement of the Forests, and of the Meets, Mears, Limits, and Bounds of the Forests,' which set forth in the preamble, that not only judgments had of late been given by which the bounds of some of the forests had been variously extended, but that in these bounds commonly known, and formerly observed, to the great advantage and vexation of many persons having lands adjoining; but there had also been some endeavours or pretences 'to set on foot forests in some parts of this realm and the dominion of Wales, where, in truth, none have been or ought to be, or, at least, have not been used of long time.' It is therefore enacted that the bounds of every forest shall be those commonly known, reputed, used, or taken to be its bounds; and that all judgments, &c., to the contrary shall be void; that no place where no justice-seats or other court had been held within sixty years should be accounted forest; and that commissions should be issued for ascertaining the bounds of forests as they stood in the 20th year of the preceding reign, and beyond which they should not extend. Since that time, however, the old forest laws may be considered as having been practically abolished, and the offices connected with their administration and execution turned into little better than sinecures.

The 11th chapter of the Carta Forestarum of Henry III. contains the following curious provision—Whatever archbishop, bishop, earl, or baron, coming to us at our commandment, pasheth by our forest, it shall be lawful for him to take and kill one or two of our deer, by view of our chief warders, and the second and thirteenth deer falling, is an horn for him, that he seem not to steal our deer; and likewise they shall do returning from us as it is arescribed.

As this law is still unrepealed, any bishop or nobleman may shoot one or two of the deer if he should pass through any of the royal forests, with impunity. But horsemen, being upon any hunting, it may be observed, was formerly so common and universal an eiscopal amusement, that the crown is still entitled, at the death of every bishop, to have his kennel of hounds, or a composition in lieu thereof. Auckland Park, and certain others administered by the bishop of Durham by forest services; particularly, says Camden, 'upon his great hunting, the tenants in these parts were bound to set up for him a field-house, or tabernacle, with a chapel, and all manner of rooms and offices; perfect provision, which dogs and servants took to his provision, and to attend him during his stay for the supply of all conveniences. But now all services of this kind are either lost by decay, or changed into pecuniary payments.'

The FOREST SCIENCE, constitutes a separate and distinct branch of education, which originated in Germany from the increased scarcity of wood. The first special instruction of this kind was given by Mr. Zanthier at Islenburg, near the Harz forests, and its importance being immediately appro-

For the sake of facilitating communication between the central parts of the country, Prussia directed particular attention to the subject, and the present king, on coming to the throne, ordered that, 'in future, situations in the forest department should be conferred with a view to the most perfect preservation of the forests; that these situations should be founded on knowledge and experience, and no longer granted as a recompense for service.' In consequence a new organization took place, and competent instruction in all things appertaining to the management of forests became necessary. An application for an appointment to any post in the forest department.

In the forest academies are taught botany generally, and particularly as regards the ordinary productions of the forest, including vegetable physiology, mineralogy, zoology, entomology, surveying, geology, and the means of resisting the encroachments of sands, draining and embanking, together with the care and chase of game; as also the laws and regulations of forest administration. The examination which the candidates undergo is very strict, and the results of the system has been eminently beneficial.
The tree associations of natural forest trees:

The oak (Quercus), and its varieties, the beech (Fagus sylvatica), the hornbeam (Carpinus betulus), the birch (Betula alba), the elm (Ulmus), the maple (Acer campestre), the alder (Betula alba), the ash (Fraxinus excelsior), the lime (Tilia cordata), the chestnut (Castanea sativa), the walnut (Juglans regia), the crab (Prunus mays), the wild cherry (Prunus avium), the mountain service (Sorbus aucuparia), the service (Sorbus domestica), the aspen (Populus tremula), the white poplar (Populus alba), the common ash (Fraxinus excelsior), the Lombardy poplar (Populus lasi-tigrina), the sycamore (Acer pseudoplatanus), the plane (Acer platanoides), the hael (Corylus avellana), the sallow (Salix caprea), the osier (Salix viminalis), the pine (Pinus sylvestris), the silver fir (Pinus picea), the larch (Larix europaea). The wood of all these trees is divided into three sorts: hard wood, white wood, resinous wood. The German writers admit only two sorts of trees, the deciduous and evergreen, and this is more a botanical division than one applicable to forestry.

The uses to which the wood is applied vary much, according to circumstances and situations. The most profitable is that of timber for buildings, and more particularly for naval architecture. The oak, beech, elm, and fir, are the chief woods employed for this purpose; but the chestnut was at one time considered as equal to the oak, as the roofs and beams of many old buildings testify; Windsor castle among the rest. For mildwoods the ash, beech, service tree, walnut, and crab, are most useful. For various utensils for the dairy, the lime, the sweet chestnut, the sallow, and the poplar, are used on account of the whiteness of their wood. Various soft woods are used for turning, as well as the hardest, when they have a close grain and are not apt to split.

When wood cannot be applied to building or domestic uses it is still very valuable as fuel, and in this point of view it is important in those countries where pit coal is not abundant. The best wood for fuel is oak, and next to this beech. The harder the wood, in general, the more heat it gives out in burning. The trunks of large trees, even into convenient lengths and then split into billets, make the best fuel; but where wood is scarce it is found most profitable to cut down the trees at the age of 30 or 40 years at most, when they have acquired a considerable height of stem and width of trunk. In the wood for the purposes for which it is used in France and Germany the trees are drawn up by being left close together, and the side branches are kept cut to the height of 30 or 40 feet, so that they only spread out at top, and the trunk never acquires the size which it would if the tree stood singly, and had room to spread out its branches.

In order to judge of the value of woods in different soils the following table may be useful. It is calculated on the assumption that the ground is covered with trees as much as it will bear.

<table>
<thead>
<tr>
<th>Age of Trees, Years</th>
<th>On Poor Soils</th>
<th>On Good Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>20</td>
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<tr>
<td></td>
<td>20</td>
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<td></td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

This table is the result of careful measurement of woods cut down at different ages; and it shows that the maximum in poor soils is attained in thirty-five years, in middling and good soils at 200. But it also shows that the increase of wood per cent, in ten years is greatest from twenty to thirty in poor soils, from forty to fifty in middling soils, and from seventy to eighty in good soils; so that it never becomes profitable to allow any wood which is to be used for fuel to stand above eighty years.

In good soil at thirty-five years growth the wood in the tree has increased one cord per acre each year; and the rate of growth increases till the nineteenth year, after which it begins to diminish. But it must also be taken into the account that wood of the age of seventy, eighty, and ninety years is of far greater specific gravity than that of twenty-five or thirty; and consequently the increase in bulk in ten years, when the tree has reached its maturity, produces a three times as great increase in weight as that indicated by the measure indicates.

On good soils oaks and beech will continue to increase for 200 years; but in poor soils they do not thrive after thirty-five years, and then they begin to waste.

Preparatory to making a plantation of any extent it is necessary to establish a nursery of rare plants; for although trees which are raised from seed and have never been moved become much larger and finer than those which are transplanted, it will be found on calculation that a quick return is much more profitable; and as a matter of economy it has been found that trees which have been transplanted arrive sooner at a certain growth than those which are sown on the spot where they are to remain.

The ground chosen for a nursery should not have a better soil than that in which the plants are finally to be placed. In fact, in a large nursery, once the plants are transplanted, they are perish together. The surface may be enriched by some manure to make the seed vegetate. If it is small, it may be sown in drills, and the aerons and larger seeds may be dibbled regularly as beans are in a garden. The ground being kept very neat by hoeing, the plants will rise regularly, and they may be thinned out after the first year; those which are taken out may be transplanted after cutting off the tap root, in another spot in the nursery. When the trees are three or four years old, and have grown strong and stand firm at the side branches having been carefully pruned off, they may be transplanted where they are to remain. The ground should be trenched and well drained if it is wet. It is useful in northern climates to plant hardy evergreens, such as the Scotch fir, amongst forest trees, to serve as shelter to those which are tender, if they perish altogether. These are called nurses, and are gradually cut out, as the oaks, ash, beech, and other more valuable trees grow up.

If the ground is dry it is only necessary to dig a hole eighteen inches deep and nearly a yard in diameter, for each tree; this is to be half filled up with the loose earth taken out; the young tree is then to be placed on this surface and its roots spread out, the tap root being cut off. The best earth is then carefully spread over the roots and trod in, but not so much as to destroy the firmness which is necessary for the roots to hold to the ground. In wet situations the trees are sometimes placed nearly on the surface of the ground, and a small mound of earth is raised round the stem; but it is much better to drain the land properly, without which the plantations
will never thrive. The proper distance to plant oaks is ten feet apart each way, with a fir-tree between every two. In five years half of the first may be cut out, and the oaks planted where they stood. If oaks are cut out five years all the first will be cut out and the oaks will be able to protect one another. In twenty-five years from transplanting, half of the trees may be cut down, and there remain planted gradually as they spread and advance in growth.

From 1800 to 1832, the vineyards of Beaujolais, from the nature of their value in ship-building, the side branches are not taken off higher than fifteen or twenty feet from the ground; and where trees have plenty of room, as in budge-rows or parks, this may be judicious, but in close plantations it is of advantage to leave the branches unpruned. In the first few years of the age, many of the branches are always cut off to the height of thirty or forty feet. This is done gradually as the tree grows. When the branch is very young it may be cut close to the tree, and the bark will soon cover the wood and obliterate the sign of the branch. When it is from four to six feet high, the first inch of the stem is cut off, and the branch is cut close next year; and if the first branch is cut out it will be allowed to thrive. When it is three years old a little more may be allowed, and if it is five years old all the branches of the top of the tree will be cut off, to the height of ten feet from the ground. If the branches are allowed to grow longer than ten feet, they should be cut off as they come up, to the height of six feet. The French find that the better the branches are pruned, the better the wine. The trees are grafted on the stems of wild vines, and they are planted in the early spring. The planting was done in the middle ages a county which was rendered hereditary by Guillaume, one of the officers of Charles Le Chauve. He was about a.D. 890 succeeded in Lyonois and Forez by one of his sons, and by another in Beaujolais, which was founded in the sixteenth century, and is henceforth called Forez or Feurs, a name of the proper. Some parts of the soil of the plain of the Loire were at that time called Forez, a name which is still used for some parts of the plain of the Loire. The soil of the plain of the Loire is very productive, and the soil of the plains of the Loire, and of the slope of the hills which separate that valley on the east from Lyonois and on the west from Auvergne. It comprehends the coal field (for part of it) of the best quality in France; productive of coal, to the east of the principal manufacture: St. Etienne, the Birmingham of France, is within its limits. It produces also abundance of flint-mermer and excellent turpentine; and corn, wine of good quality, and excellent hemp. It is watered by the Loire and several of its tributaries, and extends in one part across the hills which ordinarily bound it on the east down to the river Rhône.

The district of Forez was subdivided into Haut Forez, capital Feurs; Bas Forez, capital Montbrison (population in 1832, 9240 for the town, 9360 for the whole commune). It is now comprehended almost entirely in the department of Loire: a small portion is included in that of Haute Loire.

The other principal towns of the ci-devant Forez, with their population in 1832, are—St. Bonnet Le Château (2079 town, 2189 commune), Bourg Argental (1734 town, 2203 commune), Challes sur Lyon (3079 commune), St. Etienne (33,004), Firminy (2438 town, 3779 commune), St. Genest et St. Julien (2703 town, 3274 commune), St. Julien en Jarret (3231 commune), St. Just sur Loire (1525 town, 2500 commune), La Fouillouse (3471 commune), St. Rambert (3015 commune), Val Be-noîte (4433 commune), and Bessan-Basset (5244 commune). These towns of Forez, Beaujolais and other districts formed a few years ago a common part which is now divided into several parts.
east to west 26 miles. Its area is said in Mr. Headrick's 'Agricultural Survey' to contain 532,243 English acres, or 433,141 Scotch acres. The latter measure, which is most commonly used in this district, is the one in which the largest pro-
portion of the whole surface is given as follows:

<table>
<thead>
<tr>
<th>Woods and plantations</th>
<th>20,764</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivable wastes</td>
<td>20,000</td>
</tr>
<tr>
<td>Hills and mountains unarable</td>
<td>150,836</td>
</tr>
<tr>
<td>Cultivated and improved</td>
<td>340,463</td>
</tr>
</tbody>
</table>

In Mr. Macaldb's 'Statistical Account of the British Empire' the whole extent of the parish is said to be 570,000 English acres, of which 250,000 are water. In other recent accounts, the extent of land in cultivation is stated at 375,000 acres, and the wooded land 35,000 acres, of which 500 acres are natural wood and coppice.

General view. There are four natural divisions of the surface. The first is the Grampian district, which comprises somewhat less than the north-western half of the county, and exhibits a tract of irregular mountain ridges, which, for the most part, have a shallow moorish soil, and are covered with short heath, and large tracts of peat moor, but numerous valleys by which they are intersected are fertile and picturesque. The direction of the ridges is generally from north-west to south-east, and the numerous streams which rise in this mountainous district all flow in a south-westerly direction. The principal mountains in this district are called the Braes of Angus; they rise in several places to an elevation of 3,400 feet above the level of the sea, and exhibit all the grand and various scenery of an alpine country. The principal valleys are Glen Isla, Glen Prosen, Glen Lennox, and Glen Clova.

The second division is formed by the great valley of Strathmore, or How (hollow) of Angus, which extends across the centre of the county, from south-west to north-east, including the towns of Cupar, Forfar, and Brechin. In length, it is thirty-three miles, and the width from four to six miles. Here the surface is gently undulating, and beautifully diversified with streams, well cultivated fields, plantations, villages, and gentlemen's seats. The third division consists of the Straths and the islands, which run parallel to the west coast, and exhibit the several names of the south-west extremity of the county, and terminate in the promontory on the coast called Red Head, which rises to about 1,500 feet above the sea. Some of these hills are upwards of 1,400 feet above the level of the sea, and command extensive views of the north sea and the Tay and ocean on the other. In many parts they are covered with short heath, in others they are cultivated up to their summits, and contain many fertile and beautiful valleys. The length of this district is about 30 miles, and its breadth is 10 miles. The fourth division is the Grampian district, included between the Straths and the Isles of the Tay and the ocean. It extends from the boundary west of Dundee to the hills about seven miles south of Montrose, varying in width from three to eight miles, and sloping gently towards the shore to the east and the south. This tract is generally very fertile, under high cultivation, and adorned with numerous villages, plantations, farm offices, and elegant villas. Near the shore of the Tay there are mounds of loose sand, containing extensive beds of sea-shells, at various distances from the water's edge, and the presences are of the tertiary period, although so great a portion of this county is covered with mountains, it contains, on the whole, a greater proportion of arable land than any other county of Scotland, and it is not inferior to any in opulence and prosperity.

Minerals and Fossils. Grampian District. The great chain of primary rocks called the Grampian Hills, a section of which forms the north-west portion of this county, has been minutely described in a geological survey of these mountains by Colonel Errie. They are composed chiefly of 1st, granite, in perfect qualities, and very durable for building. It is formed of crystallized rhombohedral felspar, commonly intermixed with laminated tale or mica, and takes a brilliant polish. In the cavities and fissures are found yellow and smoke-coloured topazes; when they are white, the rock is called citrine. The rock usually consists of 

minerals explained. Next to the granite a very large proportion of the Grampians in this county is composed of fine grained, hard, and greyish mica, and micaceous schistus or mica schist. It is always stratified; the beds lie at various angles and are often perpendicular. This rock is generally of a lead colour, but is found occasionally brilliant with the touched by the Chinesen manufacture. The finest granite curbstones, and even the tail of slate of a silvery line occurs among the schistose rocks in large blotches or in irregular veins. It often contains silicious spar, and is thickly studded with small garnets, varying in colour from a faint to a deep crimson. Porcelain stone is found in some of the granite hills. Next in order of value comes the mica gneiss, a characteristic of the Grampian rocks, which was assigned to it by Dr. Walker, professor of natural history in the university of Edinburgh, because it contains the same proportions of silica and alumina which are required to compose the finest porcelain. Its colour is generally white, resembling to grey, or red, owing to the presence of iron. Lead mines were wrought in the Grampian range above a century ago, and the ore is said to have yielded a part of silver. The ore, which is galena, is a blackish colour, and metallic lustre, and is thought to be obtainable in abundance, if plans were taken to make excavations for the purpose. Limestone is plentiful in various parts of the mountainous district; it is frequently streaked with blue and white, or spotted with yellow, and contains crystals and tints. Large veins of slate occur along the declivities, but are not as numerous as those on the south-west coast. The bank of the North Esk, and at Currie on the South Esk, large masses of jasper are imbedded in schistose and micaeous rocks. It varies in colour from a bright yellow to a deep red, is susceptible of a high polish, and may be termed a mica jasper. The mica jasper is the usual constituent of the Grampian rocks, which is porphyry. It occurs in broad veins contiguous to the schistose rocks, and forms numerous hills; generally of a brown, yellowish, or whitish colour, and is interlaced with grains of quartz and rounded feldspar. These rocks, together granite, gneiss, micaeous schist, mica slate, clay slate, and porphyry, are the usual constituents of the primary mountains in Scotland, and they completely succeed each other in the order here described.

The transition rocks, lying between the granite and flintz, appear on the declivities of the Grampians towards the valley of Strathmore. They consist of grey schistose mica slate, in which occur beds of slate, spar, and numerous elliptical masses of jasper, some measuring 30 feet by 15 feet. These rocks, together granite, gneiss, micaeous

schist, mica slate, clay slate, and porphyry, are the usual constituents of the primary mountains in Scotland, and they completely succeed each other in the order here described.

Strathmore District. In descending from the Grampians the first rock that occurs after the porphyry is a coarse pudding-stone, gravel-stone, or breccia. By the peo-
pularity it is called 'jack-y-stone,' from being composed of conglomeratic formations, and by the shape of the stones, which are held together by a ferruginous cement of great hardness. This rock has evidently been formed from fragments detached from the rocks above described, which, in their progress towards their present position, had been rounded by the action of water. Thus, and under local circumstances, it has induced several topographers to believe that this spacious valley, of which the How of Kincardine is a continuation, was once the channel of a great river or lake. As we descend along the beds of the streams which form this district, the scenery becomes more beautiful, and the scenery of the Grampians is converted into the species of sand-stone which is called rubble-stone, because, owing to its hardness, it cannot be cut with the blisel, and is fit only for what masses call rubble-work. It is of a brown or red colour, and consists of gritty particles of sand, which are intermixed with a few grains of quartz, in the pudding-stone. Lower down this first species of sand-stone gradually into one which is softer, of a deep red colour, and has beds of deep red clay interposed between its strata. It consists of particles of silex cemented...
by ferruginous clay. It often occurs in laminae, or slates, fit for roofing, and is easily cut with the chisel. Its beds frequently contain detached yolks or rounded pebbles, and pudding-stone is often found with it in alternate beds.

Shell-marl, formed from the exuviae of several kinds of foraminifera, is found at Newcastle upon Tyne, in the Grampian, and is a very useful manure. It is procured in large quantities from beneath beds of peat-moss at the bottom of several antient lochs which have been drained chiefly for this purpose, namely, the lochs of Kinordie, Lundie, Logie, and Restennet. From the undrained lochs of Forfar, Rescobie, and Balgarny, it is dragged up by means of iron scoops worked from boats. In the "Agricultural Survey" it is stated that the value of 100 acres of this marl, averaging five feet in thickness, in the drained bed of Loch Long, Angus, is £200 sterling. The sale of this marl at Restennet the sale part of the drained marl bad yielded (in 1813) a clear profit of 16,000l. This marl is here also obtained from several drained mosses or peat-hongs.

The description of the other alluvial strata comes under the head of soils.

Iron has been discovered, and from the number of ferruginous springs which rise in various parts, several beds of iron ore are conjectured to exist. The only other mineral worthy of notice in this district is a species of pipe-clay, found probably in the south-west extremity of the valley near Glamis.

District of the Sidlaws Hills.—These mountain ridges are composed chiefly of sand-stone, the strata of which lie nearly horizontally towards the south, and decline towards the north west. At different points, it is of various forms; red, brown, grey, white, and greenish. Some of the fragments are of a polished form sufficient to form an imperfect mirror. Numerous beds of indurated clay of a red, grey, and bluish tint, are interposed between the strata. They lie between layers resembling slate. Interposed between these strata of sand-stone are large beds of the selyk-stone, varying from 50 to 100 feet in thickness. The rounded stones imbedded in this species of rock consist of white and red quartz, jasper, whinstone, porphyry, and grey and red granite. The porphyry contains a ferruginous sandy cement. The superficial stratum of this district is composed of several varieties of whinstone, which appears in the various forms of basalt, greenstone, porphyr and a cellular stone by some believed to be volcanic lava. The colour varies also from red, brown, and grey to green, dark blue, and black. All the kinds of agate and onyx enumerated by mineralogists are found on these hills, but they are less in number and size than those found on the hills near Falkland, in Fifeshire. Quarries of limestone of a peculiar structure are also found. A large fragment of a circular mass of rounded fragments of various colours cemented together in a crystallized spar, and is, in fact, a species of mottled marble. Large beds of clay-marl, a very useful manure, occur in several parts of this district along the ravines and alluvial bottoms of the mountains. The large areas of the Sidlaw Hills are large quarries of sand-stone flags of superior quality for pavements, steps, tombs, &c. Those which split off from half an inch to an inch in thickness are much used for roofing. The slabs from these quarries are largely exported. A road from Aberforth to Leith, London, and many other places. Their strata form a broad continued zone from the south-west to the north-east side of the county. Lead has been discovered, but not in sufficient quantity for the encouragement of mining. Copper ore has been found. Specimens of this metal are believed to exist in the Sidlaw range.

Maritime District.—Beds of red sand-stone, including rounded fragments as before, occur frequently to the south and east of the zone of sand-stone flags, but no gravel or jolly-stone is found in this district. Veins of whin and porphyry intersect the sand-stone strata, and form numerous hills. At Hedderwick, two miles north of Montrose, quarries of limestone are extensively wrought. The stratum lies deep, and is twenty-five feet in thickness. The stone is hard, and is used for making flags and paving in a country of great subterraneous fires. It is burnt at the quarries in several large kilns. On the sea-shore, about two miles south of Montrose, is another very large limestone quarry, which has been worked since the year 1696. Rock and clay marl are abundant in the district round Montrose. Numerous large boulder stones of Grampian granite lie scattered in the lower parts of the county, and shapeless detached masses several tons in weight, evidently of the same origin, are found in the Strathmore and maritime districts. Coal of an inferior quality has been traced a little to the west of Aberbrothick, but this county may be said to be destitute of this important mineral, and the supply is obtained chiefly from Fifeshire and Fife, where the climate is more favorable to its formation, and the difficulty, procure for fuel peat, bruswood, broom, and furze. There are several chalybeate springs, which are believed to be serviceable in dyspepsia.

Soils.—The general colour of the soils of this county is red, inclining to brown and black. The shade darkens with the degree of moisture. On the Grampians is generally found a thin stratum of morass earth, through which the rock often juts from a substrata of whitish clay. In the Grampians the alluvial soil is loose and friable, having a rough surface, and is well adapted for root crops, turnips, and artificial grasses. In the lower parts of the county the peat soils, that is, those which have been formed from the mineral strata on which they rest, are generally thin, mossy, and encumbered with loose stones. The primary soils on the sand-stone rocks are composed chiefly of tenacious clay, and are naturally very unproductive, though, when properly wrought, manured, and drained, they produce excellent crops of wheat. The primary soils upon whinstone are very fertile, but often too shallow for thorough cultivation. Many bottoms, and in some spots, exhibit a soil of barren sand. Fine terraces of rich black and brown vegetable mould occur in several places, as, for instance, at the west extremity of the basin or lake of Montrose. On the whole, the Grampian district and the declivities may have been subjected to the action of the sea, for this is the case of the stones, which have been covered with coarse clay and moss pasture, and all the lower lands have partly retentive soils, and partly soils chiefly alluvial. Along the coast, north of Montrose, between Aberbrothick and Dundee, around the latter place, and in the eastern district of the county, the soils are of a very poor character, consisting of loose sand, partially covered with stunted grass, and useful only as nourishing ground for stocks of rabbits. The principal bed of peat is called the Dilly Moss, on a ridge of the Sidlaw Hills. On the Grampians the best peat beds occupy the hollows on the highest summits. It requires much labor to obtain this fuel in the populous lowland districts.

Hydrography, Roads.—This county has about forty miles of sea-coast, in which there are three ports, namely, Dunbar, Aberdeen, and Montrose. There are two large rivers and a few parishes in which there was not a lake. The number is now much reduced. Some have been drain to gain an extent of arable land, but many have been wholly or partially drained for the sake of the rich marl manufactured from the marl district. The largest lake in the county is Loch of Leuchars, which has been considerably drained, and which, along with other backwater lakes, is used as a reservoir for Montrose. Of these which remain: Lochie, on the Grampian, the source of the North Esk river, is a mile in length, and is embosomed among groups of lofty mountains. Lentrathen Loch is a beautiful sheet of water at the base of the Grampian range, nearly circular, and a mile in diameter. It is enclosed by magnificent mountain scenery, and its banks present some rare botanical plants. The Loch of Forfar lies west of that town; its length is about a mile, but its water has been much reduced by draining for the marl on its sides. East of Forfar lies a tract of low grounds of similar dimensions. It is one of a chain of five, extending across the Sidlaw range of hills. The loch or basin of Montrose is an inland bay; it contains an area of more than four square miles, but is so shallow that at low water the greater portion of this space is left a dry tract of sand. All these lakes abound with pike, perch, trout, and eels.

The following are the principal rivers, or, as they are provincially called, waters:—1. The North Esk (Gaelic, Uisg) issues from Lochies, which is fed by mountain streams issuing on the west side of the county. It is burnt at the quarries in several large kilns. On the sea-shore, about two miles south of Montrose, is another very large limestone quarry, which has been worked since the year 1696. Rock and clay marl are abundant in the district round Montrose. Numerous large boulder stones of Grampian granite lie scattered in the lower parts of the county, and shapeless detached masses several tons in weight, evidently of the same origin, are found in the Strathmore and maritime districts. Coal of an inferior quality has been traced a little to the west of Aberbrothick, but this county may be said to be destitute of this important mineral, and the supply is obtained chiefly from Fifeshire and Fife, where the climate is more favorable to its formation, and the difficulty, procure for fuel peat, bruswood, broom, and furze. There are several chalybeate springs, which are believed to be serviceable in dyspepsia.
forms from rock to rock with a picturesque beauty, which has been artificially improved by the elegant taste of Lord Gordon, in whose estate it flows. No part of this stream is navigable.

2. The South Esk issues from the north-west masses of the Grampians, and having received numerous torrents descending into the Tay of Strathmore, where it is further augmented by several brooks: continuing easterly by the town of Brecin, it passes through the basin of Montrone into the sea. On several of its falls are erected flax spinning-mills, and other machinery.

3. The Ia is formed by numerous torrents among the Grampian summits on the north-west side of the county. Its course is south-west to near Ruthven, where it turns off to join the Tay, in Perthshire.

Like the North Esk, in escaping from the Grampians, it has worn a chasm in the granite rocks moreover than 50 feet perpendicular, and it forms one of the greatest of the beauty. One has a clear precipitous fall of at least 35 feet. The banks are very steep and richly wooded for several miles, and the scenery, at the junction of the Meltam water is made highly romantic by the extensive ruins of the ancient fortified castle of Airle. The Doan, Lunan, Dighty, and other smaller streams, are not of sufficient magnitude for particular notice. Numerous perennial springs flow from the sand-stone hills. One at Kirktown, in the parish of Kinnetts, emits 25 gallons per minute.

The principal roads branch off from Dundee—1, to Aberbrothick, Montrone, and thence to Aberdeen; 2, to Forfar and Brecin; 3, to Cupar Angus and westward. These, and other lines of internal communication, are kept in proper repair by the proprietors, and numerous stone bridges are built across the small streams. The principal one is over the North Esk, on the road from Montrone to Kincurrine. A railroad from Dundee crosses the south-west extremity of the county to Perthshire.

Forestry.—Numerous trees found in the mosses and marshy ground, consisting of enormous oaks, ashes, elms, and hickories, indicate that formerly the lower part of this county was covered with forests. Some of the Grampian gles are partially clothed with oak and hazel pastures; and the hills are covered with luxuriant plantations, but trees do not grow on the higher parts of the mountains. Near the sea-shore trees do not thrive unless when planted in ravines, or behind banks by which they are sheltered. Plantations are confined chiefly to places not suitable for the plough—to thin moorish soils resting on clay or gravel; but in gentlemen's parks and pleasure-grounds trees occupy soils of the best quality. On the declivities of the Sidlaw Hills extensive plantations are mixed with forest trees, chiefly larch, oak, ash, elm, plane, beech, and cherry. The large cypress, spruce, and silver firs are planted to shelter the other young trees. Plantations are thinned twelve years after planting, and the tallest and straightest sticks are exported to Kent for hedges, and there are many groves of these and other trees in the Grampian mountains. The plantations are extensive and the trees are of a good large size, being regularly thinned. Many of the noblest trees of the county are preserved by the earl of Airlie, and the earl of Brecin, the earl of Melgven, and the earl of Atholl, and some of the trees on the estates of the earl of Atholl are remarkable.

The Earl of Airlie, alone, since 1811, has planted above 3000 acres near Ruthven. Beautiful inclosures and plantations now appear in every parish. The largest wood is that of Melgven near Brecin.

The plants of this county have been investigated with great industry and ability by Mr. George Don, who was born and resided here, and who added more new species to the British Flora than any botanist before or since. His ample and valuable collections were sent to the Linnean society, and published in 'The Agricultural Survey,' published in 'The Agricultural Survey,' exhibits abundance of interesting facts for the scientific botanist.

Climate.—The great variety of elevation in the maritime, island, and alpine districts causes a correspondent variety of climate. On the high lands, where the snow lies on the summits during the greater part of the year, the air is generally cold and piercing. In the great midland valley, and in the sheltered parts of the maritime district, the climate is comparatively mild and genial. On the coast the easterly winds are occasionally very severe. The heaviest rains are from the east and south-east, and the deepest falls of snow from the north and north-east. In the evenings of warm summer days a chilling wind, sec-

accompanied with a damp and thick haze, often comes from the sea. It is very offensive to the feeling, and produces of colds and rheumatisms, and when precipitated on the earth as hoar-frost is injurious to vegetation. On the whole this county may be said to be rather bleak and unfavourable to crops, as the heavy rain, in many cases, is accompanied by the raising of mires and stagnant ponds, and the general improvement and cultivation, have greatly ameliorated the climate, and notwithstanding the general variableness and inolenety of the weather, the native inhabitants are a healthy and vigorous race.

Estate and Agriculture.—About one century ago a great portion of this county was in the hands of a few antient families; but since the introduction of trade and manufactures, landed property has changed its possessors very frequently, and has become much more minutely divided and more heavily burdened, so that the great barons mentioned by Edward, in his Description of Angus in 1676, only about one-third have at present any possessions in the county. In Mr. Headrick's 'Survey of the value of a large proportion of the estates is stated to be from 1000 to 1000/ a year; a few from 2000/. to 6000/; and subjects above 12,000/ a year. The greatest number of the estates are held by charter from the crown, and are termed 'forehold.' Farms vary much in size, some consisting only of 20 or 30 acres, others of 800 acres. They are generally from 300 to 900 acres, and many are divided; but many small holdings in the lowland districts are taken usually for nineteen years; in the Grampian highlands for nine years. About one-third of the land in this county is held under deeds of entail, a system which, for the sake of perpetuating a family name, reduces it to mere trumpery, and possibly renders it more a shelter for improvement, and thus injures the interests of the county. Mr. Headrick gives the following statement of the number and value of farms in 1813:

<table>
<thead>
<tr>
<th>Yearly Rent</th>
<th>Number of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20/</td>
<td>1,574</td>
</tr>
<tr>
<td>From 20/ to 50/</td>
<td>565</td>
</tr>
<tr>
<td>50/ to 100/</td>
<td>626</td>
</tr>
<tr>
<td>100/ to 300/</td>
<td>315</td>
</tr>
<tr>
<td>Above 300/</td>
<td>86</td>
</tr>
</tbody>
</table>

Total number 3,222

The walls of the old farm-houses were all constructed with turf and stones in alternate layers, and the roofs were formed of branches or grey turf, or thatch fastened on with rope. One of these enclosures, with one door and no window, lodged the farmer's family and his cattle, who all slept round a fire on the earthen floor. A hole in the roof let out the smoke, and in the daytime it was closed by a board. From the entrance the woodmanship is built with mud, mixed up with straw, and stenched with mud. It must however be remarked that they are every year decreasing in number. The following remarks are made by the reverend author of the description of the parish of Lunan in the 'New Statistical Account of Scotland':—"A deep and secret regret that little attention has been paid to the labours of the cottagers. Scotland in this respect is very inferior to England. In vain we look for the neatly whitewashed walls, with their doors and windows enriched with roses and evergreens, and the small tasteful gardens in front, so often to be met with in England. Of late years farm-houses and farm-steadings have been generally made commodious and useful, but the cottages of the poor remain for the most part in their pristine wretchedness. In general they are far behind in comfort and neatness. It is in the eastern lowland districts that the greatest improvements are displayed in the farmers' dwellings and offices. Here the former are commonly built of red sandstones, of two stories, lathed and plastered, and roofed with tiles."

The number of hands employed in the pursuits of agriculture is estimated at 20,000, without including the great numbers occasionally engaged in seed-time and harvest, and in weeding and making hay. It may be calculated that almost every useful improvement has been adopted in the modes and implements of agriculture in this county, and that the farmers of Forfarshire cannot be said to be behind those of the most improved counties of Scot-
A species of barley called Bear, or Bar, Bigg, and Chester is that which alone was antiently cultivated. It has six rows of grain in the ear, by which it is distinguished from the common barley, which has only two rows. It is a kind of the best quality; has a thicker husk, and the straw is longer and more firmly united with the ears of grain. The bleek and elevated lands on the Grampian and Sidlaw mountains are the chief places where it continues to be cultivated, as it thrives on poorer soil and with less cultivation than the common barley.

The latter is largely sown on all the superior soils and better cultivated tracts. No precautionary preparation of barley seed is used, but it is found necessary, or at least prudent, to renew it annually either wholly or partially from England. Much use is also made of barley in making Scotland bread, and barley is largely used in the county by all classes in meat broth, commonly mixed with vegetables. This is an article of diet, owing to the scarcity of wheat, and barley is largely exported to Leith and London. The ale and beer breweries of the county, and distilleries for whiskey, consume a good portion of the produce of barley.

It is also exported for the same purpose to Leith. The hogs, to a much less extent, are fed on barley, and the proportion of barley in the common diet of the men is very considerable. A large portion of the surface of this county on the Grampian and Sidlaw Hills is covered with natural pasture.

The modern cultivation of the potato, which is now generally used as a staple article of diet, is very little practised in this county, as the number of loose stones and other obstacles, is estimated at about 40,000 acres. In some of the valleys Grampian boulders of two or three tons weight have been got rid of by blasting with gunpowder, or by dragging them off on the plough, and then the turnip is much used for feeding milk-cows, and is given sliced to horses. Cabbage and colcwort are also seen on almost every turnip-field, chiefly for the same use. Flax is now near so general a crop as it was formerly. Red and white clover are occasionally mixed with ryegrass, which is universally cultivated.

The parks and lawns of the gentry are either stocked with cattle and sheep by their proprietors, or let to graziers. The farmers have some portion of their land laid out in cultivated pasture for beasts, or in the rotation of cropping. The farms are generally cultivated only by farmers and their immediate families, and in every garden, and large quantities are exported to Leith and London. Mr. Headrick relates as a curious instance of the influence of learned ignorance, that when, a century ago, a farmer first introduced the potato as a field crop, the scientific physicians of the time refused to believe it was a species of the deadly nightshade, so that no one would venture to eat of its root, and the poor man, who had made several journeys to Ireland to learn the mode of cultivation, was laughed at, and died in great nevertheless.

FARM SERVANTS are chiefly on potatoes and oatmeal, varied occasionally with pork or bacon; their drink is either milk or beer, and the wages of those who are not fed in the farmer's house are commonly paid wholly or in part with measured quantities of meal, milk, and other domestic provisions.

Gardens and Orchards.—All the resident proprietors have gardens varying from one to five acres, well stocked with all the roots and culinary vegetables which thrive in this climate, and particularly such as are produced in England. They have currants, gooseberries, cherries, plums, peaches, and strawberries, and nearly all kind of fruit generally grown in England. The orchards are generally laid out in mulberry, cherry, plum, and pear. Flowers and ornamental shrubs adorn the pleasure-gounds of the wealthy, and here exotic and other plants and fruits which will not thrive in the open air, as grapes, pineapples, peaches, and nectarines, are cultivated in large houses, and cold frames, and greenhouses, the nurseries for the supply of the inhabitants. These are particularly good in the vicinity of Dundee. But many apple and other large fruit-trees grow much into wood, yield little fruit, become covered with lichens, and often die at top, which has partly been attributed to the roots having pneumatic
treated into an unfavourable subsell; to prevent which it has been discovered that in the old abbey orchards the modern sows dig up and turn out the bottom of the deep hole in which the trees were planted.

**Live Stock. Wild Animals.**—The ancient breed of horses in this county is small, but very bony, and capable of enduring much fatigue with scanty nourishment. These animals are numerous in the highlands and moorland district. The colour is grey, and they are commonly called Garrons. In some of those parts of the county where there are either no roads, or very steep and rugged ones, and where the farmers are obliged to keep many horses to fetch peat from the hills, and carry burdens, instead of conveying them on wheel carriages, this breed of horses has a peculiar value. They feed chiefly on the stunted grass which they find on the sides of the mountains.

In the lower districts this breed has been much improved in size and appearance, and regular feeding, and shelter from the prevailing wintry winds; but generally throughout the midland and maritime plains are found the larger animals of the Lanark breed, which, as stated in *The Agricultural Survey,* are the best working horses in the world. They cost 300/. to 400/. each.

A few gentlemen rear horses for the turf, and keep studs of thorough-bred racers. Of late years much attention has been given to the breeding and treatment of horses, and every improvement has been effected in their quality and management. The great improvement in the breeds of horses, and many wretched garrons were placed abrest in a large clumsy plough, and the driver, walking before them, struck them in their faces to make them follow him; now a pair of strong horses work a light iron plough, without a driver, and sometimes those with which the Ant of the Highlanders is worked. It will be observed that the year 1813 was about 9600, and their value about 220,300. In remarking that it is mere prejudice and invertebrate habit that causes us to loathe the flesh of horses while we devour that of oxen, the learned and philosophic author of the *History of British Farming* remarks that he is afraid the above is the case, and that he is not intended to distinguish the flesh of the best quality from that of the finest quality.

Before the introduction of inclosures, turnips, clover, and sown grasses, the size of black cattle was diminutive, and eight or ten were usually yoked in one plough. The great influence of superior feeding and treatment is shown in the fact, that the same breed of oxen which, when reared on the antient plan still retained in the Grampians, attain, when fattened, only 20 or 30 stones, will, when properly fed and housed in the lower districts, often acquire a carcase of 70 and 100 stone weight. The grazing and stall feeding is conducted to a much greater extent than the rearing; large numbers being brought into the county to be fed and prepared for the butcher. Almost every herd consists of various breeds and crossbreeds. A large proportion of the permanent stock are without horns. The colours most generally preferred are dun, brindled, and black. Numerous cows of a good description are kept to supply milk for domestic consumption. One of the best will yield eight English gallons a day. The total number of cattle constituting the permanent stock of the county in 1813 was about 37,400, and their value 261,800/. Some large herds of fattened oxen are driven to Glasgow, and many are exported to Leith and London, when three or four years old.

The original sheep of this county, and apparently of the British Isles, is the same white-faced breed as the modern flocks of these still remain in the Grampians, but generally they are much crossed with the black-faced breed of Tweeddale, which constitutes a very large proportion of the whole stock of the county. Several superior and more delicate breeds are met with in the county. The Blackfriars and Killarney breeds have lately been affected by the influence of several wealthy proprietors and the agricultural associations of the county. The total number in 1813 was about 60,000, and their value about 42,000.

Hogs have recently become very numerous, and are kept by every farmer and cottager. There are two principal breeds; one, a thin-backed, raw-boned animal, with long bristles, a tapering snout, and projecting ears, appears to have been crossed with the wild boar, and is known locally as the wild boar; the other is the small common Chinese breed, which is by far the most numerous.

The common kinds of domestic poultry and pigeons are generally kept by every farmer. A few bees are also very common. The fine yellow wax is much valued for the making of candles, and the best of the honey is consumed in the family. The mink is also very numerous, and is almost a local berry. The most abundant kinds of fish are salmon, cod, herring, haddock, turbot, sole, skate, sprats, smelts, lobsters, crabs, and muscles. With respect to fresh-water fish, the lochs and the principal streams supply abundance of pike, perch, trout, and eels. The salmon, which are long, and are said to be most delicious, are much sought after. The salmon are taken from April to August. The value of the annual produce of this fishing station, which is only one of several on the same coast of this county, is estimated at 7400L. Large supplies of salmon are sent to the London market packed in boxes of brine, and are received in the market already salted and preserved. Some thousands of salmon are likewise packed for sea fishing. The salmon fishing is carried on from March to June.

The fishing of eels is carried on in the rivers and on the coasts. In the River Clyde, the most important river of the county, being bounded on the south by the Frith of Tay and on the east by the British ocean, is so favourably situated for commerce that a ready market for its agricultural and manufacturing produce can always be securely relied upon, and its exports of linen fabrics, cattle, corn, and salmon are subjects of national interest; but as an account of the manufacture...
and maritime trade carried on at its principal towns is given under the respective description of each [see under Dundee, and the sections of the present article relating to Montrose.] it is sufficient to mention here only a few general facts of commercial importance. There are two custom-houses in the county, one at Montrose, and the other at Arbroath. The exportation of sand and its concomitants from the Port of Arbroath is an important article of trade. The masts and rigging of the principal ships that trade by the port of Arbroath, are principally derived from the fact that the monks of the antient abbey of Arbroath, to give timely warning to approaching vessels, fixed upon it a large bell which was rung by the motion of the waves. At low water of spring-tides this reef is seen extending 2000 feet by 250, the highest part being about 50 feet above the sea-level; but at high water this part is 12 feet below the surface. In consequence of the dreadful storm in 1799, when 70 vessels were wrecked along this coast, it was determined to erect upon this reef a light-house similar to those at Montrose, Aberdour, and Newhaven. This admirable edifice, completed accordingly by Mr. Stevenson, in 1810, at a cost of 55,000L., is of a circular form, 113 feet in height. The lower part, from the base to the height of 30 feet, is entirely solid. The walls then commence 7 feet in thickness, and it is 12 feet in diameter at the base, 42 feet. The lantern is of cast-iron, 12 feet in diameter, 15 feet high, and roofed with copper. The keeper’s apartments, 50 feet above the base, are said to be as dry and comfortable as any house in Edinburgh, though, in summer, about 3 degrees below the temperature of the air. The height of the town is 30 feet. The shore on the Tay and thence nearly to Arbroath is low and sandy. Bold and precipitous rocks then over- look the sea as far as the lofty promontory of Red-head. In these high rocky cliffs are 20 deep and gloomy coves into which the Storm, the Tay and the Arbroath Rock, at these echoes. The shore of the Lunan Bay is low and sandy; rocks then commence and terminate just beyond the South Esk, from whence sandy flats extend to the termination of the county at the mouth of the North Esk.

The total tonnage of the shipping belonging to the county amounted in 1831 to about 22,000 tons, but there has since been a very great increase. Seven or eight ships, each about 400 tons, are employed in the Greenland whale fishery. In 1833 the tonnage of vessels belonging to the port of Dundee is stated to be 8775, and the total of vessels employed about 3500; chiefly in the Riis, London, and coasting trade, at various stages. Ship-building is well executed at this port, and at the town of Montrose, which possesses at least 100 vessels, amounting to 11,500 tons. In a similar trading carcase, Arbroath employs in the same way about 50 vessels, each from 60 to 200 tons burden. Formerly this county exported large quantities of grain to Norway and Russia, but this department is now chiefly confined to London, Liff, and Glasgow by the Clyde canal from the Firth.

The weaving of linen, which was the antient manufacture of Scotland, as were wollen cloths of England, was first introduced by the Flemings whom the Scotch kings encouraged, and they were trained for this purpose. Ten large flax factories, as back-buckaback, canvas, sheeting, dowlas, kirk, are manufactured in this county to a very large extent for exportation. Finer bleached linens for shirt-making and sheeting, and coloured thread are also extensively manufactured. Flax and hemp, being grown in the county, are turned into thread for weaving, moved by water and by steam, are established throughout the county; and on the banks of the streams are many large bleaching-fields. About eleven million yards of linen fabrics are stamped annually, and the bleaching of these fabrics is carried on by small persons. In weaving these fabrics men and women usually work five days in the week, and 14 hours a-day; in spinning, on an average from 1s. 6d. to 2s. a-day. In the spinning-mills the time of work is 55 days in the week of 12 hours a-day, and the wages of men are also 1s. 6d. to 2s. a-day. Women in the mills earn 6d. or 10d. a-day, and children 4d. and 6d. The following observation is made by the Reverend author of the description of the parish of Kin
dattles, in the 'New Statistical Account of Scotland':—

‘Mill-spinning and weaving, from the long daily confinement, the imperfect ventilation of manufacturing houses, and the noxious flaxen dust inhaled into the lungs in respiration, seldom fail to produce bad effects on the constitution. Thus cause many cases of consumption, asthma, and dropsical diseases. At the same time, by blending together many young persons of both sexes, a bad effect is produced on the morals of youth.’ In addition to the above branches of manufacture might be mentioned various flaxen manufactures, distilleries, and various other establishments chiefly for supplying the common articles of domestic consumption. Shoes are made in large quantities for exportation.

The most noted fair for horses and cattle is held at Brechin in June. About 14 other fairs are held at the different towns throughout the county. The places and dates may be found stated in any of the Scotch calendars. Every town, and several of the larger villages, have weekly markets for domestic provisions and utensils, and for the various implements of their trade. (See descriptions of the towns of the county.)

There are 56 parishes, each of which is separately described in the 'New Statistical Account of Scotland.' The following five towns are royal burghs.—Forfar, Dundee, Montrose, Forfar, Brechin, and Arbroath. Each of these towns, in addition to being one among the most ancient in Scotland, is the county seat of a member to parliament; one is returned for Dundee, and one jointly for the burghs of Montrose, Forfar, Brechin, and Arbroath. The population of the county in 1831 was 129,606. The annual value of the real property at the general valuation was £131,760.

Education.—Every parish is provided with a school-house and a schoolmaster, who resides in the same building, to which is attached a garden and sometimes a field for a cow. In Dundee an academy is established for teaching the Latin and French languages, and the use of the scientific instruments of astronomy, and the English language; and in all the towns the parochial schoolmasters have classes for the elements of mathematics, mensuration, geography, astronomy, navigation, and drawing; besides the English, Latin, and French languages. The following remarks of the Rev. Mr. Hunter, superintendent of the schools of this county, are worthy of transference:—The establishment of parochial schools was carried by our zealous reformers, who strenuously impugned the maxim that education is to be the prerogative of the rich. An approach towards public instruction was made by the bishops who established the first Scotch universities, but their object was to inculcate the nonsense of Aristotle’s logic, in which the clergy might find weapons to defend their tenants against the attacks of the presbyterian ethicists. It was not the plan by which the poor as well as the rich might be instructed. The parochial schools have diffused a taste for learning among the whole body of the people. Even the meanest cottager thinks it a sacred duty to have his children instructed in reading and writing, and to give them higher degrees of education. Our Scottish aristocracy long looked with a jealous eye on the parochial schools, and foreboded the subversion of all order, and the extinction of all industry, from instructing the lower classes of society; but the fact has turned to the very reverse of their predictions; for since knowledge has been generally diffused, the people have become much more orderly and industrious; agricultural improvements have advanced with unprecedented rapidity; great numbers of ingenious artists have been employed in constructing engines of various kinds, improvements have been made in every species of machinery; well qualified persons have been abundantly found for naval and military service; and the numerous Scotchmen appointed to fill various public offices in the kingdom owe their promotion to the education they received at the parish schools.’ Lending libraries are numerous, not only in the larger towns, as Montrose, but in the villages. One of those in the parish of Craig contains 600 volumes. In the same parish a friendly society of farmers, with 300 members, is established in many other parts of the county. Several savings’ banks are also well appreciated and beneficially used by the labouring population.

According to the Parliamentary Return of 1818, there were in this county at that time 78 parochial schools, containing 3511 children, with a revenue of £2430; 146 day-schools, unendowed, were attended by 3905 scholars; and 79 Sunday-schools, attended by 3085 children.
The poor are relieved by voluntary donations, church collections, and interest arising from funded legacies bequeathed by charitable persons.

Towns—Besides Dunfermline the principal towns are Ayr, Greenock, Forfar, and Montrose. Montrose is a royal burgh and seaport, having separate jurisdiction. It is situated at the mouth of the South Esk River, between the large lake or basin of Montrose and the sea. In ancient times it was a place of considerable strength, as shown by walls. The site, with the adjacent northern shore, is dry and sandy. One principal street, which is wide and regular, extends from north to south, and is crossed by several smaller streets and lanes. Many of the old houses present their gables to the south, and are illuminated by windows. There are several inns supplied from the parish of Dun, three miles distant on the western side. The town is lighted with gas, and is well paved and cleansed. The river is crossed by a hand-built stone suspension bridge, which was built by the company of Capel Brown, and cost about £28,000. A pouting is levied amounting to about £1200 a year. The church, in the middle of the town, is a large plain building capable of containing 3000 persons. A steeple, 200 feet in height, has been newly erected. An episcopal chapel, and a chapel of ease, are remarkable and neat places of worship; the same remark is applicable to several De-consenting chapels.

There are three banking establishments, a custom-house, a town-house, prison, theatre, and post-office. The annual revenue of the town is about £35,000. A school established by the trustees of the hospital, and occasional donations. Numerous bequests of beneficent persons form a poor's fund, amounting to $10,500. Besides this, there are large sums for the maintenance of the poor. The town has a collection of books, a library, and a hospital, and occasional donations. In a public academy are taught mathematics, arithmetic, Latin, Greek, French, geography, writing, history, &c. There are two free-schools, one for 42 boys and 35 girls; the other for 100 scholars of both sexes. A school established by the trustees of the hospital, and occasional donations. Several bequests of beneficent persons form a poor's fund, amounting to $10,500. Besides this, there are large sums for the maintenance of the poor. The town has a collection of books, a library, and a hospital, and occasional donations.

There are three public libraries and museums, one of which contains about 19,000 volumes. The principal manufactures are flax-spinning and weaving. Four flax-mills in the town, moved by steam of 129 horse-power, produce annually 83,899 spindles of yarn. Three other large flax-mills on the river North Esk, belong to the town and parish of St. Andrews.

There are manufactories for soap, candles, starch, ropes, sails, and steam-machinery; besides five breweries, two towers, a foundry, and a steam flour-mill. Ship-building is well established, and 100 vessels of 11,000 tons belong to the port. The foreign import of flax in 1834 was 2400 tons, of whale-oil 400 tons, for timber 1330 loads. The exports costwise to London, Leith, and other ports were—

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>23,700 qu.</td>
</tr>
<tr>
<td>Oats</td>
<td>3,550</td>
</tr>
<tr>
<td>Wheat</td>
<td>1,430</td>
</tr>
<tr>
<td>Peas and beans</td>
<td>3,460</td>
</tr>
<tr>
<td>Potatoes</td>
<td>114,560 tons.</td>
</tr>
<tr>
<td>Salmon</td>
<td>1,500</td>
</tr>
<tr>
<td>Cod</td>
<td>902 barrels</td>
</tr>
<tr>
<td>Herrings</td>
<td>4,970</td>
</tr>
</tbody>
</table>

The harbour is formed by a breastwork at the mouth of the river, within which vessels of 400 tons can anchor, the water being 35 feet in depth at high tide, but no vessels enter the basin.

Lime, slates, flag-stones, and numerous other articles are largely exported. Four public consignees are appointed at London, and two to Leith. There is a weekly market on Saturday, at which corn is sold by sample, and all kinds of farm and garden produce. The population of the burgh in 1831 was 12,053, besides 800 sailors, but there has since been a considerable increase. James Graham, marquis of Montrose, the champion of the Covenant, was born in the town in 1612. Andrew Melville, the father of the Scottish Presbytery, was educated here; and here a Frenchman, named Monnier, first taught the Greek language in Scotland, in a private school, in the year 1584. In cult by a new street through an eminence called Fort Hill, on which an ancient castle once stood, a stratum of human bones was discovered, nearly six feet in thickness.

Kirkintilloch is an ancient burgh of barony and market-town, situated five miles north-west of Forfar, on the edge of a mountain by and overlooking the valley of Clunie. It consists of several irregular but handsome streets, and has an elegant church and episcopal chapel, each with a spire, a town-hall, and several other public buildings of modern date. A weekly market is well supplied with provisions, of which, besides the rears and farmers of the Grampian mountains. Coarse canvas and various other brown linens are manufactured very extensively. Three or four millions of yards are annually stamped, and several plaid-mills and other manufacture are established by the evil called the Garioch. There are several schools, one of which is endowed with 1700l. The population in 1831 was 5656.

Caytar-Ayr, so called in contradistinction from Cupar, the capital of the county, and from Ayr, the county town, and a burgh of barony, on the Perth boundary line of the county, about eight miles south-west of Forfar. A magnificent Cistercian abbey, founded here in 1164, by Malcolm IV., on the site of a Roman camp formed by Agricola, of Britannia. Brash was the seat of the later manufactured. There are also extensive bleaching-grounds, a large tannery, a well-endowed school, &c. Population in 1831, 2622.

Antiquities. Religious Buildings.—The first manufactories of churches and cathedrals in this and other counties in Scotland were erected on the sites of the religious schools and cells of the Celestine or Caleusic, that is, the primitive Christians who having been banished beyond the Roman empire in the persecutions of the early emperors, sought refuge in Scotland, where the church was consecrated by the solemn rites of the Druids, they taught the doctrines and morality of the Christian gospel together with the sciences, so called, of that period. Their name is generally supposed to be derived from the feet of the great Athenian philosopher Caledon. This Pagan, on gaining independence, gave place to the episcopal system, the abbeys and cathedrals at present still standing rose upon the ruins of their school establishments, and in the inns of the country, as the Roman abbeys.

Drum, a particular part of the county, was included in the diocese of St. Andrews, and a bishopric of Aberbrothoch was attached to this diocese. The see of Brechin, which was the seat of the bishops of Brechin, was attached to the diocese of Brechin, but was far surpassing its medieval extent, and was the bishop's of the curious round towers, of which, though so common in Ireland, only one other specimen exists in Britain, namely, at Abernethy, in the county of Perth. The whole height is 103 feet, that is, 80 feet to the summit of the cylindrical column or spire and 23 to the base. The spire is 60 feet in height and 6 feet in diameter. The diameter of the base is 15 feet, and the height is 10 feet. The spire is surmounted by a small pinnacle with a cross. The church is cruciform, 275 feet by 67. The transept 162 feet by 27. A 250-spike stave hall, and two magnificent towers at each corner. Next in dignity to the cathedral of Brechin, but far surpassing it in magnificence and extent, was the monastery of Aberbrothoch, of which the ruins stand on a lofty position overlooking the country. Although great masses of the building are much disguised and the fabric is in various stages of ruin, the remaining portions are every where with surprise and religious awe. The church was cruciform, 275 feet by 67. The transept 162 feet by 27. A 250-spike stave hall, and two magnificent towers at each corner. Next in dignity to the cathedral of Brechin, but far surpassing it in magnificence and extent, was the monastery of Aberbrothoch, of which the ruins stand on a lofty position overlooking the country. Although great masses of the building are much disguised and the fabric is in various stages of ruin, the remaining portions are every where with surprise and religious awe. The church was cruciform, 275 feet by 67. The transept 162 feet by 27. A 250-spike stave hall, and two magnificent towers at each corner. Next in dignity to the cathedral of Brechin, but far surpassing it in magnificence and extent, was the monastery of Aberbrothoch, of which the ruins stand on a lofty position overlooking the country. Although great masses of the building are much disguised and the fabric is in various stages of ruin, the remaining portions are every where with surprise and religious awe. The church was cruciform, 275 feet by 67. The transept 162 feet by 27. A 250-spike stave hall, and two magnificent towers at each corner. Next in dignity to the cathedral of Brechin, but far surpassing it in magnificence and extent, was the monastery of Aberbrothoch, of which the ruins stand on a lofty position overlooking the country. Although great masses of the building are much disguised and the fabric is in various stages of ruin, the remaining portions are every where with surprise and religious awe. The church was cruciform, 275 feet by 67. The transept 162 feet by 27. A 250-spike stave hall, and two magnificent towers at each corner. Next in dignity to the cathedral of Brechin, but far surpassing it in magnificence and extent, was the monastery of Aberbrothoch, of which the ruins stand on a lofty position overlooking the country. Although great masses of the building are much disguised and the fabric is in various stages of ruin, the remaining portions are every where with surprise and religious awe. The church was cruciform, 275 feet by 67. The transept 162 feet by 27. A 250-spike stave hall, and two magnificent towers at each corner.
Res tenet. The magnificent monastic church of Dundee has been elsewhere noticed. Many smaller monasteries stood in various other parts of the county.

Military Structures.—Of the ancient vitrified forts, which occur in continuous chains along the heights of the north-eastern part of the county, there are three principal remains in this county. The fort, called the Castle of Finhaven, is on a hill of the same name in the parish of Oathlaw, 1500 feet above the surrounding country. It is quadrangular, 476 feet by 83 feet and 125 feet, and consists of a wall of an elevated, hexagonal rock. The remains of another of these forts is on the summit of a mount in Drumstrudty Muir, parish of Monymouth. The third is on the top of the Law of Dundee, a remarkably high conical hill on the north of that town. On the summit of this fort was a tower, ramparts, and outworks evidently superadded at some subsequent period. Much has been written by learned and scientific antiquaries on the origin and use of these remarkable structures. By some they have been believed to be the effect of volcanic eruptions. Others think that they were the walls which surrounded the great heath fires antiently lighted on mountain tops to alarm and assemble the people against the invading armies of their enemies, and that the vitrification of these large masses of stone was produced by the continued action of such fires. But the fact that these thick walls are found vitrified on the exterior as well as on their interior side, and often not in the middle, is one proof, besides many others, that the masonry was artificially reduced to a solid vitreous mass. The art of squaring stones and cementing them with lime-mortar appears to have been unknown until after the Roman invasion. (Chalmers's Caledonia; Vitrified Forts in the Enog. Brit.; Hedrick's Surgery.) Hill forts are the next in antiquity, and there are many of these in the county. The most important one is on the summit of a very steep conical hill in the parish of Memnur, north-west of Brechin. The area of the fortress within the walls, which are of great thickness, is oval, 134 yards by 60. On a similar hill, to the east of the former, this one by a short distance to the north of another of these forts formed entirely of earth. Two miles south-west of Glamis, on the Sidlaw Hills, there is one of a semicircular form with a wall 332 feet in circuit, 27 feet high, and 36 feet in thickness. On the hill of Dunsvarrow, Caithness, and several others, similar forts are partially remaining. They all contain vestiges of rude buildings formed of loose un cemented stones, and are sufficiently large to have held the inhabitants of the surrounding district and their cattle, which, in times of danger, were driven into each of them well or extended areas for collecting rain-water, and their situation is always on the top of an insulately and precipitous rock, or hill inclosed with deep entrenchments. There are remains of several extensive Roman camps which formed a square, or octagon, of great size, and were added to the north-east sides of the county, including the towns of Forfar and Brechin. The Roman conquests were here first extended by Lollius Urbicus, in the reign of Antoninus Pius, A.D. 140. The encampment at Harfealands, north of Caeberudson, is replanted with lime and other woods of stone and earth, and might contain an army of 60,000 men. Other similar camps occur in the parishes of Forfar, Brechin, and Oathlaw; the last encloses an area of 80 acres.

Of baronial castles erected during the prevalence of the feudal system, there are several magnificent specimens in this county. At Broughty near Dundee are the remains of a very magnificent castle consisting of several massive towers and walls, standing on a rock which juts into the water of the Firth. The vaults of this castle are used for depothing fish, of which the salmon is packed for the London market. On the shore of Lunan Bay are the ruins of Red Castle, so called from being built of red sandstone. A large square tower and parts of extensive outworks are still standing. There are also remains of the Castle of Finhaven, near Brechin, and that of Kirknewton, which are extensive fortifications. Eildon Castle, the Castle of Invermark, Kelly Castle, the Castle of Affleck, and several others present similar remains. Besides these there are numerous vestiges of less important baronial structures, consisting either of single towers or of earls' mansions, standing in the middle of the fields of poor farmer or day-labourer. All these buildings indicate the great forcey of ancient manners. The lower rooms are vaulted with stone and lighted only by narrow loop-holes.

P. C., No. 641.

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Two miles north-east of Forfar is a Druidical circle composed of stones 12 feet in height and 10 in breadth. Monumental stones with curious sculptures, and cairns containing coffins and urns, occur in various parts of the county. Near Arthurdington, a section of a monument connected with a cairn which is traditionally said to contain the bones of this legendary prince. Glamis and Dunsinane in the neighbourhood are places of great interest, as mentioned in Shakespeare's tragedy of 'Macbeth,' where the hero says—

"By Sisqil's death I know I'm Thane of Glamis."

Here the usurper made his last stand against his pursuers, Macduff and young Seward, who came to restore Malcolm Canmore to the throne. On the hill of Dunstone was the castle of Macbeth, from which he called when, in the words of the poet, he exclaimed,—

"To kiss the ground before young Malcolm's feet, Though Birnam wood be come to Dunsinane, And those opposed be of woman born."

And damned he be who first assuaged his greatness,—

"Lay on, Macbeth!"

Two mounds of earth, called Duff's Know and Bellie Duff, contain, it is said, the remains of Macduff and of his antagonist Macbeth. At Glamis is a large erect monumemtal stone commemorating by means of emblematical sculptures the assassination of King Malcolm II., whose enemies were treacherously murdered in the presence of the frozen loch of Forfar. Many curious specimens of Caledonian, Druidical, Scandinavian, Roman, and monastic antiquities have been discovered in this county, as stone-coffins and urns in sepulchral cairns, battle-axes and other weapons, sculptured stones, etc. In a tumulus in the parish of Logie Pert stone-coffins were found containing human skeletons of gigantic dimensions. On some of the uncultivated Grampian moors are vestiges of the ancient Caledonian dwellings, consisting of large slab stones placed together in various forms. Houses of Proprietors.—Of these there are about seventy, many of which are distinguished for architectural magnificence and picturesque beauty of situation. The following are a few of the more important.—Glamis Castle, the residence of the earls of Strathmore, is a general of castellated mansion, about a mile from this village. In the time of Charles II. it was a large quadrangular mass of buildings, with lofty towers and gateways opening beneath them into a spacious court. The interior has been altered, but the remains of the original structure remains, and great additions were made to the north and east under the direction of Inigo Jones. The room is still shown in which King Malcolm II. was murdered in 1034. Brechin Castle, the spacious mansion of the Hon. W. Innes, near Brechin, is one of the most interesting houses in the county. It is castellated, and from its turrets are seen a circuit of untellable plantations and pleasure-grounds, and much distant and delightful scenery. Numerous other mansions of the nobility and gentry might be noticed; but the descriptions of the few well known and of ancient interest, which are only briefly named in the present article, reference must be made to some of the works quoted above.
FORFEITURE, the punishment by loss of lands, estates, rights, offices, or personal effects, annexed by law to certain crimes, and also to certain illegal acts or negligence in the holder of lands or offices. In criminal cases, forfeiture is threifold:—1. Of real estates absolutely, as for high treason; if freehold, to the king; if copyhold, to the lord. 2. Of the profits of the real estate, if freehold, to the crown during the life of the offender, and a year after his death, the same to be sold for the benefit of, and for the use of, the escheats of the lord: [Escheat]; after which the land escheats to the lord [Escheat]; if it is copyhold, it is at once forfeited to the lord. 3. Of goods and chattels, in felonies of all sorts. Some other cases of forfeiture of lands or goods, or of offices, are established by different statutes, and by decree of preemunire, &c.

Lands are forfeited upon attainer, and not before [Attainders]: goods and chattels, upon conviction. The forfeiture of lands has relation to the time of the offence committed; the forfeiture of goods and chattels has not, and they only are forfeited which the offender has at the time of his conviction. A bonâ fide alienation of his goods and chattels made by a felon or traitor between the commission of the offence and his conviction, is therefore valid.

Forfeiture, in civil cases, takes place where a tenant of a limited, or, as it is called, a particular estate, grants a larger estate than his own, as where a tenant for life or years assumes to convey the fee-simple. So, if a copyholder commits waste, or refuses to do suit of court, or a lessesse imposes a mouldy tenement; for in such cases he is a renunciation of the connexion and dependence, which constitute the tenure, and which arc an implied condition annexed to every limited estate.

Forfeiture may also be the consequence of the breach of express conditions between landlord and tenant, or persons connected in tenure; but in cases of forfeiture where compensation can be made for the breach of the condition, a court of equity will compel the party entitled to the forfeiture to accept compensation. The right to take advantage of a forfeiture may also be waived by the act of the person entitled which recognizes the continuance of the title in the particular tenancy, as, for instance, the receipt of rent by a landlord in respect of a time subsequent to the act by which the forfeiture is incurred.

In criminal cases, these forfeitures by alienation contrary to law, as by alienation in mortmain without licence, or to an alien; in the former instance, if the immediate lord of the fee, or the lord paramount, neglect to enter, the king may; and in the latter, though the conveyance is ineffectual, yet as an alienee, he can authorize the king to enter, upon office found. [Office Found.]

Offices are forfeited by the neglect or misbehaviour of the holders; and the right to the next presentation to ecclesiastical benefices is forfeited by simony and by lapses. The title of a vacant benefice is, in many cases, made subject to the payment of ecclesiastical benefices for money, gift, or reward. Lapse is where the patron neglects to present to a benefice within six months after it has become vacant, in which case the right to present accrués to the ordinary; by neglect of the ordinary for the same space of time, to the metropolitan; and by the like neglect of the metropolitan, to the king. [Benefices.]

FORCULIDÆ, a family of insects belonging to the order Orthoptera, and, according to some authors, constituting the order Cacoptera.

The names of the various species of earwigs. They are distinguished from the orthopterous insects (excepting the Blatta and the Mantis tribe, which, with the Forficula, constitute Latreille’s family Curvariida) by having the posterior legs formed for running, and their wings, when folded, are almost always disposed horizontally on the body; the females have no corneous ovipositor; both sexes however are furnished with two corneous forceps-like appendages at the hinder extremity of the body: the antennae are short, composed of five to six joints, and vary considerably as to the number of their joints: the thorax is generally of a rounded form, and but slightly convex.

The family Forculidæ is divided by Dr. Leach into three genera, the principal characters of which are taken from the number of joints of the antennae. This first genus is that to which he restricted the name of Forficula, is distinguished by having fourteen joints to the antennæ. In the next genus (Labidura) the antennæ have thirty joints; and in the last, the genus Lobia, the antennæ are twelve-jointed.

To the first of these genera belongs our common earwig (Forficula auricularia, Linn.), an insect too well known to require a description.

In damp situations, are found under stones, and under the bark of trees, frequently in great abundance. They are also found in flowers, which they destroy by eating the leaves, &c.

A remarkable fact connected with the habits of the ear-\-wig, is, that the antennæ are formed in the manner of the hen; and the young (which resemble the parent, except in being of a paler colour and having neither wings nor elytra), as soon as they are hatched, creep under the boll of the mother for protection.

The wings of the earwig are transparent, of large size, and when expanded are shaded like a fan; the principal nervures radiate from one point near the anterior margin. These organs, when not in use, are folded beneath two small hornv wing-cases; and hence to the common observer the animal appears wingless.

The male and female common earwig differ considerably in their anal forceps, those of the female being less curved and destitute of a tooth-like process which is observed on the inner side at the base of the forceps of the male.

There is in this country another species of earwig, almost equally common with that we have just noticed, but which is of a much smaller size. It is found about hot-beds and dunghills, and differs from the common earwig somewhat in its habits as well as in its structure. This belongs to the family Forfículae, and is distinguished by the name earwig, or ear-crawler.

One species of the genus Labidura is also found in England, but is of rare occurrence. It is of a much larger size than the common earwig.

FORGBY is the false making, counterfeiting, altering, or changing any instrument of writing with a fraudulent intent, whereby another may be defrauded. The offence is complete by the making the forged instrument with a fraudulent intent though it be not published or uttered, and the publishing or uttering of the instrument, knowing it to be forged, is punished in the same manner as the making or counterfeiting.

It is by no means necessary to bring the offence within the legal meaning of the term forgery, that the name of any person should be counterfeited, though this is the most common mode in which the crime is committed; thus a man is guilty of forgery who counterfeits a deed for the purpose of defrauding other parties, though he signs his own name to the instrument; and the offence is equally complete, if a man being instructed to make the will of another, inserts his own devisees instead of the true owner.

In truth the offence consists in the fraud and deceit.

At common law the crime of forgery was only a misdemeanour, but as the commerce of the country increased and paper credit became proportionately extended, many cases have occurred, in which in most cases made the offence a capital felony.

The extreme severity of these laws tended to defeat their object, and parties very frequently chose rather quietly to sustain the loss inflicted upon them by the commission of the offence, than by a prosecution to subject the offender to the loss of life. This feeling, and the diffusion of the truth, that the object of all laws is to prevent crime and not merely to punish, has caused successive mitigations in the laws relating to forgery, and now by the statute 11 Geo. IV. c. 6, and 1 Vict. c. 84, the punishment of death is abolished in cases of forgery, and a punishment varying between transportation for life and imprisonment for two years, is substituted. (J. Haw, P. C.; Russell on Crimes; Donovan’s Criminal Law.)

FORK (Anglo-Saxon for; the same as the Latin furca), an instrument divided at the end into two or more prongs for various uses, especially for the table. Addison speaks of a Dutch fork with three forks. It is sometimes used for an English breakfast and for pastry. Butler, in his ‘Remains,’ i. 195, says, ‘They had run through all punishments, and just ‘scaped the fork.’

The agricultural, or dung-fork, and a large fork for the fish-pond, were the only implements of this name actually in use among our early Englishmen. The description of a table or eating forks is found in the ‘Chronicon Placentinum’ of John de Musiis (Muratorii, vol. vi. p. 548), a writer of the early part of the fifteenth century, who, when speaking of the luxuries of the people of Fiescal...
FO R

recently introduced, says, 'they use cups, and spoons, and little forks of silver' ('et utuntur tacis, cuegriia, et forcatulis'). But this fashion was not used in any other country that I saw in my travels, neither do I think that any other nation of Christendom doth use it, but only Italy. The Italian, and also many strangers that are commont in Italy, do always at their meals use a little fork when they eat their meat. For with his fingers, which they hold in one hand, they cut the meat out of the dish, they fasten their fork, which they hold in their other hand, upon the same dish, so that whatsoever he be that, sitting in the company of any others at meal, should underright touch the dish of meat with his fingers from which all at the table do cut, he will give occasion of offence unto the company, as having transgressed the laws of good manners, insomuch that for his error he shall be at the least brow-beaten, if not repre- lented in words. This form of feeding, I understand, is generally used in all places of Italy, their forks being, for the most part, made of iron or steel, and some of silver, but those are used only by gentlemen. The reason of this their curiosity is, because the Italian cannot by any means exactly duplicate the Romanus and the Agathodaimon. Gentlemen's men's forks are not alike clear. Hereupon I myself thought good to imitate the Italian fashion by this forked cutting of meat, not only while I was in Italy, but also in Germany, and oftentimes in England since I came home: being a certain learned gentleman, a familiar friend of mine, one M. Laurence Whitaker, who, in his merry humour, doubted not to call me at table furerefer, only for using a fork at feeding, but for no other cause. Coysele's testimony is confirmed by Fynes Morgan: 'In Istria, by the bay of Brioni,' fol. 1617, who, speaking of his bargain with the patron of the vessel which conveyed him from Venice to Constanti- nople, says, 'he gave us good diet, serving each man with his knife, a spoon, and a fork.' (See also Ben Jonson's To the World is an Aes, act v. sc. 3; and his Volpone, act iv. sc. 1.)

Even when Heylin published his 'Cosmography,' in 1652, forks for the table were still a novelty (see his third book); where, having spoken of the ivory sticks used by the Chinese, where a gentleman would go unwashed to the table, he says, 'and some of our spruce gallants taken up of late, came from hence into Italy, and from thence into England.'

FORLI, LEGAZIONE DI, a province of the papal state, is bounded on the north by the province of Ravenna, on the east by the Romagna, on the south by Pescara ed Urbino, and on the west by the Adriatic. Its area is reckoned at 1232 square miles, with a population of 188,000 inhabitants, distributed in 8 towns, 32 terre having a communal council, and 404 villages or hamlets. (Calin- dira Feuerbronn.) The province provides Forli, one of the richest in the papal state; and the road from Rimini to Bologna is one of the pleasantest in Italy, leading through a succession of neat, considerable, and cheerful-looking towns, in a fine well-cultivated country, with a landscape heightened by a constant view of the Adriatic. The mountains nearest the town are never very high, but stretch gradually away to the sea. One of the hills affords a fine prospect of the town, the church of St. Sebastian, which was formerly the cathedral, and other buildings, and the surrounding country. The citizens are a very industrious set of people, and take great care of their appearance. Tiles are generally used as roofing, and there is a great deal of brickwork. The houses are generally built of stone. The roads are good. The Misura, a small river, has a fine square, several handsome palaces and churches with paintings by Carlo Maratti, Guido, Guercino, Cignani, and other masters, a Lyceum, and fine public walks. Forli is a bishop's see and the residence of the legate. The population of Forli is 14,700. 2. Cesena, a pretty town in a fertile country near the foot of the Apennines, watered by the river Saveno, which is a fine bridge, has a hand- some town-house on the market-place, which is adorned by a colossal statue of Pius VII. (Chirumonti, who, as well as his predecessor, Pius VI, was a native of this town, Cesena is a bishop's see, has a college for clerical students, and a valuable public library, collected by the Malatesti, who were lords of Romagna in the Middle Ages; it is rich in MSS., among which is a MS. of the History of Cesena, bishop of Seville in the seventh century, entitled 'Rhetorico- logia,' which is a kind of cyclopaedia. (Valery, Voyages Littéraires en Italie.) The population of Cesena is 9400. On a hill outside of the town is the Benedectine church of the Cistercian convent of San Donato. 3. Half way between Forli and Cesena is the little town of Forlimpopoli, the ancient Forum Popilii, with a collegiate church, a castle built by Cesare Borgia, and about 2000 inhabitants. 4. Savignano, on the road from Cesena to Rovigo, and in the province of Venice, is a pleasant town, with good buildings and about 3000 inhabitants. Near Savignano flows a small river, called Riumicino, which is now generally believed to be the antient Rubicon: it joins, below Savignano, another stream, called Pitrello, which town nearer to Cesena, after which the united stream enters the Adriatic. A Roman bridge is thrown across the Riumicino. Near it, on a pillar, is an apocrifal inscription, (which has been mistaken by some for an antient one,) containing the senatus consultum, which forbade, under the heaviest penalties, any commander to cross the Rubicon in arms. 5. Rimini, the Roman Ariminum, a considerable town with 13,450 inhabitants, situated near the mouth of the river Marciaha, which is crossed by a handsome marble bridge of five arches and 290 feet long, begun under Julius Caesar, and finished under Trajan. There are also some remains of an amphitheatre, besides inscrip- tions and other marbles found on the site of the antient harbour. Rimini, with its Roman monuments, appears a fit entrance into the limits of the classical part of Italy. Half an hour from the town is the modern Markies, which Leon Battista Alberti raised by order of the Malatesi, lords of Rimini, and which is adorned with the mau- soleum of that distinguished family of the Middle Ages; and the fortress, which was also created by the Malatesi. Rimini was, at a very early period, under the dominion of the bishop of Ravenna, from whom the abbey of S. Maria in Cuba received endowments by the advocate Alessandro Gamalungas, and which contains MSS, chiefly concerning the history of the town, and a museum of antiquities and a college or Lyceum. 6. Sar- sara, at the foot of the Apennines, south-west of Rimini, is a pleasant town, as is also Savignano, and the town is now a decayed town surrounded by walls, with only 325 inhabitants. 7. Cesenatico, on the sea-coast, north-east of Cesena, in a plain abounding with wheat, Indian corn, and hemp, has 4440 inhabitants, including its territory.
divide them according to the senses, into shapes, colours, sounds, smells, and tastes, and into the different modes of feeling.

Form is distinguished from the real nature of things and, considered in this point of view, the idea of form is practically used in common speech and in science. Thus we speak of a form of government, a form of compound, a form of man, a form of thought, a form of stomach, a form of form, a logical form, &c. Whoever esteems the form of anything more highly than the thing itself, or through narrow-mindedness confounds the one with the other, is a formalist, as many learned men and official persons are.

FOR PAUPER. By the statute 11 Hen. VII. c. 12, every poor person having cause of action or suit shall have, by the discretion of the chancellor, original writs or subpoenas, without paying for writing or sealing the same; and the judges of all courts of record, where such suit shall be commenced, can be sued and be required to answer to writs of summons and attorney to act for such person, without taking any reward. It is discretionary with the court to grant this indulgence, but it is rarely refused upon petition, supported by affidavit that the petitioner is not worth 5s. in the world depriving him of the privilege, which is called dispaupering him, and the right to the matter in controversy, and by a certificate by a barrister that he has good cause of action or suit. This statute extends only to plaintiffs in civil suits at law, but the courts of common law have by a discretionary process to grant this to any pauper, though without special cause shown the advantage is never given to a prosecutor. The Court of Chancery, to which the statute 11 Henry VII. does not apply, has, from an early period, power to issue and make the writs a pauper, though without the conditions as the courts of law, though in that court, it seems, if the party be in possession of the subject matter in dispute, and that should be worth more than five pounds, he cannot except it in his affidavit, and therefore will not be regarded as a pauper. The privilege may be granted either at the commencement of the suit, or at any period of its progress, but if granted during the pendency of the suit, it has no retrospective effect, and the party is not relieved from the costs previously incurred.

A form of action in form of demurrer or appearance pays costs neither for stamps, nor fees to the officers of the court, but if he obtains a verdict with damages above 5l., the officers take the fees. In case of improver or vexatious conduct on the part of the pauper, the courts will sometimes, though rarely, deprive him of the privilege, which is called dispaupering him; but it seems that in such cases a pauper plaintiff is never ordered to pay costs to the defendant, though, according to Blackstone, a pauper, if non-suited in his action, formerly had his election either to be whipped or pay costs. (C.F.R. 11 Hen. VII. c. 12; 12 Hen. VII. Ed. I.; 13 Hen. VII. Ed. I.; 14 Hen. VII. Ed. I.)

FORMEDON (a compound of the two Latin words forma doni), one of the many writs in use under the old law for commencing a real action, before the more conveniences and proper writs to litigants were abolished. [EJEMPTION] It was the peculiar remedy of a tenant in tail, and the highest he could have, and was therefore called tenant in tail's writ of right. The writ of right was granted to such only as claimed the fee simple, for which reason the statute of the 2 King 3 Eliz. 1 Ed. I. gave this writ to tenants in tail.

The writ was of three kinds; formedon in the descender, in the remainder, and in the reverter, according as the plaintiff alleged his title to have accrued by descent, in remainder, or reverter. To write formson with all the others used for the commencement of real actions, was abolished by 3 and 4 Will. IV. c. 27, s. 36.

FORMENTERA. [Balearic Islands.]-This word is derived from the formating of keeping, and is applied to the process of drying those insects that are not killed in boiling water, an acid as strong as vinegar is obtained, and has been used for the same purpose. The formate obtained from this acid liquor by adding carbonic acid, precipitating the foreign matters by sulphate of iron, evaporating the solution to dryness, and distilling the residue with sulphuric acid, by which formic acid comes over and is condensed in the receiver, where it crystallizes and is in the form of mica.

It has been shown by Dobereiner that formic acid may be prepared artificially: he heated in a retort 5 parts of sulphuric acid diluted with 10 of water, with 2 parts of a crystallized tartaric acid and 5 of oxide of manganese by the mutual action of these substances carbonic acid is obtained, which escapes in the gaseous state, and dilute formic acid is condensed in the receiver: this dilute acid is to be saturated with potash, and the resulting formate, when decomposed by sulphuric acid, yields concentrated formic acid, which is similar to the formic acid of Dobereiner and Paul. [Phil. Mag., vol. x. p. 399,) show that formic acid may be obtained by the action of sulphuric acid and water upon yro or maize, when heated to the boiling point, with precautions mentioned.

The proportions of formic acid are, that it is a colourless liquid; its smell is pungent, and its taste very acid; its specific gravity is 1.166, and, when anhydrous, it consists of

<table>
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<tr>
<th>Equivalent</th>
<th>of hydrogen</th>
<th>1</th>
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<tr>
<td>Two</td>
<td>of carbon</td>
<td>12</td>
</tr>
<tr>
<td>Three</td>
<td>of oxygen</td>
<td>24</td>
</tr>
</tbody>
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Equivalent . . . 37

These elements are equal to 1 equivalent of water and 2 equivalents of oxide of carbon, and by the action of sulphuric acid it is resolved into these compounds.

Concentrated formic acid contains 19% per cent. of water among other peculiarities of formic acid, serving to show that if the water of the formic acid be distilled, the effect which it produces in not precipitating protomic per- sory from solution as acetic acid does, unless heated, and then metallic mercury is thrown down, with brisk effervescence. Oxide of lead is precipitated from a solution of the acetate of acetic acid.

The only use to which formic acid is applied has been mentioned. Its salino compounds are termed formiates; and although these are subjects of some curiosity, no one of them is used so as to require a particular description.

FORMIC AETER may be obtained by distilling a mixture of formic acid and alcohol; but it is much better procured by distilled a mixture of 10 parts of concentrated sulphuric acid, 7 of formic of soda, and 6 of alcohol. The distilled product should be mixed with water to separate the crystals, and if the formic acid is used in the form with a blue flame, the edges and point of which are of a bright yellow. This aether has not yet been analyzed, but Dr. Thomson, judging from analogy, thinks it is probably a compound one equivalent of formic acid and one of ether.

FORMOSA, RIO, a river in Africa, falling into the Bay of Benin, is also sometimes called Benin, from traversing the kingdom of that name. Its mouth, which alone is known to Europeans, is in about 5° 45' N. lat. and 3° 5' E. long. It traverses a flat little country. Landier, in his descent of the Quorra, was told by the natives that the considerable branch which at the town of Kirree turns off to the westward runs down to Benin. Hence it is conjectured that the Río Formosa is only the most northern of the branches, into which the Quorra divides after entering its extensive delta.

FORMOSUS, Bishop of Porto, was raised to the see of Rome, A.D. 691, after the death of Stephen V. He had been a friend of Froyment and piety, but being in opposition to John VIII. in the matter of the election of a new emperor, that pope had deposed him in 878, but Martin II., John's successor, honorably re-instated him in his see. His conduct, after his exaltation to the pontificate, was such as is described by his letters relative to the schism of Phocas, and the cause which he wrote to Eudos, the competitor of Charles the Simple, and to the bishops of Gaul, exhorting them not to disturb Charles in the possession of the crown. In one note, however, he has been a friend of the French king. In February, 892, he crowned Lambert, son of Guido, as colleague to his father in the kingdom of Italy, but soon after, in consequence of disputes between Guido and the
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Roman see, Fornumus wrote to Arnulph, king of Germany, inviting him to come to Italy and assume the crown. Arnulph came to Italy and was crowned as king by Fornumus in April, 895, after the death of Guido. The history of that period and of the various competitors to the crown of Italy is extremely confused. Fornumus died in April, 895, and was succeeded by Boniface VI, who, dying a few days after, was succeeded by Stephen VII, by whom the period of Lambert against Arnulph, instituted proceedings in a council against the memory of Fornumus, and had his body disinterred. Romanus however, who succeeded Stephen, in a council held at Rome, in the same year, rescued the character of Fornumus from this stigma, and had his body honourably buried again, and declared the acts of his pontificate to be legal and valid.

FORNAK (Constellation), the Chemist’s Furnace, one of the southern ascensions of Lacaille. It is situated immediately below Cetus.

FORSKAL, PETER, a celebrated naturalist and oriental traveller, was born in Sweden, in the year 1736. After studying at Götingen, where he published a dissertation under the title of ‘Dubia de Principiis Philosophiae recentioris,’ by which he gained some credit, he returned to his native country. In 1759 he wrote his ‘Pensées sur la Liberté Civile,’ a pamphlet which did not prove agreeable to the ruling powers of Sweden. A fondness for natural history had brought him acquainted with Linnaeus, then at the zenith of his fame, by whom he was favourably recommended to Frederick V, king of Denmark. In 1761 he obtained the title of professor at Copenhagen, and having been distinguished for his acquaintance with oriental languages, he was selected to join Niebuhr and others in an expedition to investigate the vegetation of the Sandwich Islands. After visiting Marseilles, Malta, some of the Greek islands, and Constantinople, he arrived at Alexandria. For about a year he remained stationary in Cairo and its vicinity; he afterwards visited Suez, and entering Arabia by Loheia, he penetrated by way of Beit el Pakhí and Zahid as far as Mocha; thence crossing the mountains to Assí and Abb, he eventually and with difficulty reached Jerim, where he died on the 11th of July, 1763. In the course of this journey, although robbed and ill-treated by thieves near Abydos, suffering from constitutional timidity, and often bowed down with sickness, he investigated with such extraordinary energy and perseverance the natural productions, especially the plants, of the places he visited, that although he never lived to arrange his papers, the scientific value of the works published after the publication of his account of the voyages, and found in Lower Egypt and Arabia Felix. This latter work is very remarkable as an illustration of the philosophical mind of Forskal, and is far in advance of the works of a similar kind published by the followers of Linnaeus. It is a work in which the relation of vegetation to climate is taken as a great object of consideration, and may in fact be quoted as one of the earliest steps made in geographical botany. We here find an attempt to show the existence of geographical parallels of vegetation, and the remarkable arrests of the same. Given the specimens of plants, you may find the latitude of a country, its surface, and the zones of vegetation upon its mountains, from their foot to their highest peaks. The ‘Flora Egypto-Arabica’ is to this day the only good account we have of the vegetation of any extra-European region. We have ‘Floras’ with more systematic learning; we have works much more complete in their details, more technical, more founded, more considered. But no work has so much in its pages of leisure, experience, and the resources of rich herbary; but when the botanist is asked to point out one as philosophically, as well contrived, as useful, as rich in valuable observations upon climate, air, soil, native names, and similar important matters, we know not what other then the ‘Flora Egypto-Arabica’ and the ‘Svenska och Formosan i Ryssland,’ a worthless Arabian weed, under the title of F. tenacissimae; but we are assured by a panegyrist of the great Swedish botanist, that in doing so he intended compliment rather than to satirize the beginning of his country’s botany.

FORSTER, JOHN REINHOLD, was born in 1729, at Dirschau in Western Prussia, of which town his father was burgomaster. Having studied at Halle, he was appointed in 1753 to the cure of Vassenhoff near Danzig. In 1765 he accepted an offer of a post to Russia, being appointed to the new colony established by Catherine at Saratoff; but he soon left it in disappointment, and proceeded to England in 1766, where he became known to Mr. Banks and others for his acquirements in natural history. During his residence in England, he employed several years as a teacher in a Dissenters’ school at Warrington in Lancashire. Through Mr. Banks’s interest he was appointed naturalist to the second expedition under Captain Cook, and he sailed together with his son George, on board the Resolution, in July 1772. A sum of 400 guineas was granted by the king to defray his expenses, besides which it was verbally understood between him and the Honourable Daines Barrington, in the name of Lord Sandwich, that Forster should be employed on his return to write the history of the voyage, and receive the profits of the publication. In the course of the voyage repeated disagreements took place between Forster and the officers of the expedition, and Captain Cook himself appears to have censured Forster’s indiscretion and want of temper. After the return of the expedition in July 1774, a controversy arose between Forster and Linnaeus, as to the correct translating the narrative of the voyage. It was at last settled that Forster should write the philosophical, and Cook the nautical parts of the work. Forster’s MSS. were to be subject to Mr. Barrington’s inspection, but on examination of a specimen of his intended work, he was told that he must return a connected narrative but only detached observations, and ultimately these were rejected. The consequence was that Cook’s journal appeared alone. Meanwhile Forster, the son, published a separate account of the voyage in 1779, a circumstance which indisposed the Admiralty still more towards his father, who was believed to have had the principal share in the work, and who thus lost all hopes that he might have entertained of remuneration. Forster’s only work that is given in the history of the voyage was his account of Mr. George to Lord Sandwich, and to Mr. Wales, who had written strictures on Forster’s narrative. In 1778 Forster returned to Germany, and was well received at Berlin by Frederic the Great, and was soon after made professor of natural history at Halle, where he remained till his death, in December, 1798.

Forster was a man of vast information both in the natural sciences and in philosophy, and general literature. His principal works are:—1. ‘De Bysio Antiquorum,’ 1776; 2. ‘Charact. General. Plantarum quaes. insulae Mariae Australis collegit J. R. Forstar,’ 4to, 1776; 3. ‘Observations faites dans un Voyage autour du Monde, sur la Géographie physique, ’Histoirue Naturelle, et l’Histoirerale,’ 4to, 1778; 4. ‘An Account of the voyage according to the instructions of the Directors of the East India Company for the surveying and settlement of the territories of Hindostan, and for a more correct knowledge of the Indian archipelago, and for the discovery of the South Passage to the East Indies.’ This latter work is very remarkable as an illustration of the philosophical
accordance with sound criticism. 4. ‘Zoologica Indica,’ 1731; 5. ‘Histoire des Découvertes et Voyages faits dans le Nord,’ 1764; 6. ‘Tableau de l'Angleterre pour l'année 1731,’ written under the influence of appointment and animosity, and consequently with little discrimination. 

FORSTER, JOHN GEORGE, son of John Reinhold Forster, accompanied his father in the voyage with Captain Cook from Botany Bay to the East Indies in 1773, of which he wrote an account in 1777, of which he was involved and his father in an unpleasant controversy. This narrative does not differ materially in the facts from Cook's journal. Forster however has added to his work various observations, which he considered as philosophically, but which are not so relevant. His coal was translated into English, French, Swedish, and other languages. Forster having returned to the Continent, was made professor of natural history at Casel, and afterwards at Wilna, from which last place he returned to Germany about 1788, and was appointed to the chair of natural history which the French took Mayence in 1792, Forster, who became enthusiastic in the cause of the Revolution, was chosen by the republicans of that city to proceed to Paris, as their representative, to request the incorporation of Mayence with the city of Lorraine, which was possessed by the Seckes. The mission, the Prussians re-took Mayence, and Forster lost all his property, including his books and MSS. This loss, and other domestic disappointments, made him resolve on leaving Europe, and he planned a journey to India and Tibet, published in 1794, and published after his death in 1795. This work was translated into French under the title of ‘Voyage Philosophique et Pueresque sur les Rives du Rhin, &c.,’ 3 vols., Paris, 1796-98. The last volume contains the history of the fine arts in Great Britain. Forster wrote also ‘Berthamania Australe,’ several memoirs on natural history, and various political and philosophical sketches and pamphlets.

FORSTER, GEORGE, a civil officer in the service of the East India Company, was elected by his journal of his journey from 1782, overland from India to Russia. He set off from Lucknow in December, 1782, and directed his route to the north by Ferozabad, Rampoor, and by the pass of Loll Dong to the upper regions of the Punjab, avoiding the countries of which he had been visited by any European travellers before him, Bernier excepted. Forster's account however proved much more full and satisfactory than that of Bernier. Forster proceeded to Cabul, crossing the Indus about twenty miles above Attock. From Cabul he followed the caravan road to Candahar, and thence to Herat to the south-east coast of the Caspian Sea. From Oude to the Caspian he was in the main to the north, on the 2,700 miles, amidst all sorts of dangers and privations, which were much greater at that time than they would be at present. He embarked at last at Meshed Ser on the Caspian, and sailed from thence to Baku and Astrakan, from which last place he travelled to Moscovia and Persia, and arrived at the end of May, 1784. On his arrival in England he published some sketches of Hindu mythology. He afterwards returned to India, and published in 1790 at Calcutta the first volume of his narrative—‘Journey from Bengal to England through the north western parts of India, Persia, and Persia,’ and returned to Russia by the Caspian Sea. On the commencement of hostilities with Tippoo Sultan, Forster was sent as envoy to the Maharrata court of Nagpore in Deccan, where he died in 1792. The Mahrattas were at war with Persia, and Persia on Caspian Sea, where it was published by a bookseller in a second volume, but was edited without much care. The whole work was translated into French by Langlet: ‘Voyage de Bengal à Petersburg,’ 3 vols., Paris, 1802, 1803. Forster added to his narrative two interesting notices of the Seikhs and the Hilalis.

FORSTERITE, a crystallized mineral, the primary form of which is a right rhombic prism. The crystals are colorless, transparent, brilliant, and small; they are harder than quartz. This substance occurs at Vesuvius accompanied by pleonaste and pyroxene. It has not been accurately analyzed, but contains silica and magnesia. FORTE, L.E. [Forte] FORTE (Italian strong, louds, a musical term, directing the performer to sing or play loudly, with strength. Fortissimo is the superlative of Forte. FORTESE, SIR JOHN, KNT, an eminent lawyer. Born in 1720, he was admitted to the Inner Temple in 1747, and afterwards chancellor. He was the author of a treatise ‘De Laudibus Legum Angliae;’ a work which has been several times quoted with the highest approbation from the bench, illustrated by the notes of Schelen, and recommended by such men as Sir William Raleigh, in former times, and by every writer who has since given directions for the study of the law. It has been several times translated into English. It is in the form of a dialogue between himself and the young prince. The book was at first printed at Paris, where some other points of difference between the civil and the common law, he concludes with a short account of the societies where the law of England was studied. This book, as well as the others relating to English law of an early date, is written in French, and the book which contains the best good government, which are very remarkable, considering the fierce and barbarous period at which they were written. ‘We cannot,’ says Chancellor Kent, ‘but pause and admire a system of jurisprudence which in so unenlightened a country, the most of the books of Sir John Coke, where the Allawas, thar is, the Allawas, on the 375

FORD, in 1742, and Scotland, which rises in the mountains separating the western extremity of Loch Cateran or Katrine from Loch Lomond. It is formed by two branches which after a course of sixteen and twelve miles respectively, unite at Aberfoyle: this united river receives the river of the same name, it being the river of the same name, it being the source of the river of the same name, it being the most respectable, and which, after rising by a gentle slope, runs through Strathmore, and the Devon, which brings down the water collected in the greater portion of the Ochil Hills. No considerable river joins it from the south. At the place where it unites with the Devon, the river, which is quite wide, and gradually assumes the appearance of a gulf, especially after having passed Kincardine. This gulf, called the Firth of Forth, is wide in its progress to the east, and joins the North Sea between Fife and the lochs of Firth and the rocks of Forth and Strathmore and branches of the Lothian coast, which is almost free from any object of interest to the eye. The distance from Edinburgh to the Forth is fifty miles. The Forth is by no means a rapid river below Aberfoyle, and may be navigated by vessels of seventy tons burden as far as Stirling; but as its course is extremely tortuous between Stirling and Alloa, it is not much navigated in this part. To Alloa the principal port, ships of 300 tons burden may ascend. On the southern shores of the firth, near the mouth of the river, the town of Grangemouth, the canal commences, which joins the Forth and the Clyde; and contiguous to it on the east, between Grangemouth and Queenferry, is good and
secure anchoring ground in the bay. The countries along the northern and southern shores of the Firth comprehend the most fertile and best cultivated parts of Scotland. (Mac- Culloch’s Highlands, &c.; Sinclair’s Stat. Account.)

FORTIFICATION is the art of constructing works for the preservation of a town or military post.

The principal object of the general plan of the works constituting the fortifications of a town or great military post, have at all times been nearly the same. Among the ancients, with scarcely any exception, the polygonal wall surrounding a place was provided with towers projecting from it at short distances; and these towers, or outwork, consisting of two or more towers, connected by walls that of the fortress itself, was generally constructed on the exterior side of the ditch and opposite a gateway, in order to protect that entrance and the bridge leading to it. The two sides of a town correspond to the bastions and curtains forming the enceinte of a modern fortress, and the harbscan may be considered as the counterpart of a ravelin, or principal outwork.

The necessity which the nations of Europe were under of remodelling their fortified towns in consequence of the change produced in the art of war by the invention of gunpowder, gave occasions to the engineers of Italy, France, and the Netherlands to emulate each other in devising the most advantageous methods of disposing the works in the purposes of defence with relation to the arms then newly introduced; and the result of their labours was the construction of numerous strong fortresses on the frontiers of those countries. In these the bastion system, as it is called, was principally founded; and a great number of very numerous projects which have since been offered to the world for fortifying places, so few should have been of a different kind. The variations however which occurred in the details of the plans gave rise to the denominations that of the French, Dutch, and the Dutch methods, in speaking of the works proposed or executed at the end of the sixteenth and the beginning of the seventeenth centuries; but it must be observed that those variations consisted chiefly in the magnitude of the angle which the two sides of a musket, or the flanks, made with the extent of what was called the second flank; that is, the portion of the curtain then generally left between the flank of a bastion and the place where the produced face of the collateral bastion intersected the curtain.

The first bastioned fortresses of France appear to have been very inferior to those which were executed in the Netherlands by the Italian engineers; and there still exist some remains of these last in which the bastions are sufficiently capacious, and at distances from each other within the effective range; and if the bastions of the ancients, were characterized by small bastions, scarcely capable of receiving artillery, and placed so far asunder as to defend each other very imperfectly. But after the termination of the civil wars which desolated the country, the attention of the French was directed to the construction of larger fortifications; and it was observed that the bombardment had the effect of compelling the engineers to think of fortifying the places of the ancients, and particularly the military posts; and Errard, a member of the corps of engineers then instituted, was appointed to superintend the reparation of the old, and the construction of the new fortifications. The citadel of Amiens was built according to the plan proposed by this officer in 1594, published as a treatise on fortification, in which some effort is made to determine the principles which should regulate the forms and dimensions of the works.

In the method proposed by Errard the bastions are much larger than those of the earlier time, the length of their faces being, as at present, about one-third of the distance between the salient angles of two collateral bastions; an orillon occupied nearly two-thirds of the length of each flank, which was very short, and formed an angle of about 72° with the curtain. This direction appears to have been given to the flanks in order that the guns behind their parapets might be as much as possible concealed from the view of the enemy in his counter-battery; but it is evident that the defenders of the opposite flanks, laying their muskets on the faces of the curtain according to the general practice, would almost inevitably fire upon each other, or upon those who were stationed on the curtain.

Errard, who composed a treatise on fortification in 1628, made several improvements on the method proposed by Errard, the principal of which were an augmentation of the length of the flanks and a perpendicular direction of the latter with respect to the curtain; by these changes a better defence was obtained from the flanks, and the evil above mentioned was diminished. But a still greater amelioration was made by Count Pagan, who, in 1645, proposed to make each flank [See the half-front of fortification between F and G, fig. 1, Bastion] perpendicular to the produced face of the curtain. This principle that each flank should work should afford each other is thus complete, and the men are not in danger of being fired on by each other. Pagan retains the orillons at the shoulders of the bastions, and he gives to the latter double or triple flanks; but the construction of these is considered as too numerous inconveniences, has ever since been discontinued.

During the reign of Louis XIV. a general reparation or reconstruction of its fortresses was ordered by the French government; and the talents of Vauban were exercised in the designing and execution of this vast work of fortification in the art of fortification which, together with the merit displayed in the conduct of fifty-three sieges, have given that engineer so much celebrity. Besides the changes made in the disposition of the parts of the enceinte, the outworks were the middle of the plan altered; and instead of assigning, for the delineation of the plan, numerous arbitrary rules which varied with the nature of the polygon, Vauban adopted the length of the side of the polygon as a base, and took certain essential parts of this line; the dimensions of the several divisions of the polygon; these, with other additional data, were reduced to a few simple precepts which were applicable to places of all magnitudes. These precepts being founded on the uses of the works may be judiciously considered as constituting a system of fortification to be observed for a long time to come, and their deviations have been made from them in the construction of great fortresses. A brief outline of the system will therefore be here given. [See the half-front of fortification between G and E, fig. 1, Bastion.]

The length of a side of a regular polygon supposed to surround the town or position, is made equal to 360 yards, in order that all the parts of the rampart on each front of the enceinte might be within the range of the arms employed in the defence. Those arms are generally placed in the middle of the line from E to H, and deduced from it the estimated breadth of the main ditch and covered-way (40 yards), we have 260 yards for the length of E or F, which is called the line of defence. This is also the distance of E or F from the shoulder of the collateral bastion, or the line at which the line of the collateral bastion is placed, which is 103 yards, or two-sevenths of E, in order that, in the inferior polygons, the bastion may have sufficient capacity, we obtain about 360 yards for the distance between the salient point of E and the two or three more yards more or less in the dimensions need not be regarded.

The directions of the faces of the bastions on each front coincide with lines drawn from the angles E and F of the polygon, through the extremity of a perpendicular let fall from the points of the line EF and made equal to one-sixth of that line; and each flank is the chord of an arc, described either from the opposite angle E or F of the polygon, or from the nearest shoulder of the collateral bastions as a centre. But this construction the flank is generally greater in length than the enemy’s counter-battery, which is necessarily limited by the angle of the glacis and the prolonged face of the nearest bastion; and it is nearly perpendicular to the direction of that face; the reason for this is not only because, on the flank of the enemy, placing his musket perpendicularly to the line of parapet, will thus be able to fire into and defend a breach which may be made in the face of the collateral bastion. The curtain is determined on the line joining the interior of the bastion, which is 6, 7, or the greater parts of the, the lines which intersect the flanks, &c., of the works, is called the magistral line; it forms the exterior side of the ramparts [fig. 1, Bastion], and coincides with the cordon, or projection, at the top of the revetment N, fig. 1.
The dimensions of the ditch are determined by the necessity of obtaining from it the earth for the formation of the ramparts and parapets, care being taken that it be not so wide as to allow the enemy, from a battery situated at a distance (as K, fig. 1, in the case of the glacis) to see, and consequently, to batter, the escarp wall near the foot of the latter. [Breach.] The counterscarp wall is rounded oppositely the flanked angles at E or F, and from thence tends towards the shoulder of the collateral bastion.

The traverses made by Vauban in the ravelins are described under that word: Q represents one-half of that work; and it will be necessary here to say, merely, that its plan is determined by using the angular points near e and f, formed by the magistral lines of the salient angles, and cut by the lines at the same distance from thence to points taken on the faces of the collateral bastions, at 10 yards from their shoulders, describing arcs; the intersection of these arcs determines the salient angle of the ravelin; and reference to the figure of the counter-scarp of the main ditch.

The traverses in the covered way were proposed by Vauban, in order to diminish the effect of the ricochet; and he was the first engineer who formed the spacious places of arms, as they are called, at L, in the re-entering parts of the covered-way, in order to obtain room for assembling troops, and to afford a good crossing fire of musketry from their faces for the defence of the glacis in front of the bastions.

An attention to the reliefs of the several ramparts of a fortress is no less necessary than to the plans; for, as it would be advantageous, when the approaches of the besiegers are near the foot of the glacis, that a fire of artillery should be shewn upon the rampart, if the entrance of the ravelin, and of musketry from the covered-way at the same time, the reliefs of those ramparts should be determined by imagining a line to be drawn from the foot of the glacis through a point three or four feet vertically above the crest of the ground, that is about 11 feet above the ground, to be produced through the parapet of the said encoignure or ravelin; then, if the soles of the embrasures, which are necessarily 4 feet below the crest of the parapet, be made to coincide with such imaginary line, the fire of artillery from thence may be directed to the enemy's trenches without incommoding the defenders of the covered-way. The crest of the encoignure thus determined will be about 18 feet above the ground, and that of the ravelin about 3 feet less. The tenaille, P, fig. 1, [Bastion.] will be described under that head. It may be observed here, that the relief of this work is determined by the consideration that, while it should be high enough to mask the postern in the curtain behind it, the men stationed on it to defend the defile, it should also be low enough to entice the besiegers to one bastion, when directed to the foot of a breach supposed to be made near the shoulder of that which is collateral to it, in order that they may not be injured by that fire.

As Vauban had occasionally to adapt works constructed according to the principles above mentioned, to fortifications which then existed, the particular method employed in disposing them acquired the denomination of his second system; and when, subsequently, he fortified Neu Brisach, some few modifications which he was led to make gave rise to a new distinction, the works of that place being considered as forming a third system. In both these systems the bastions V, fig. 2, [Bastion.] are separated by a ditch from the encoignure; and this circumstance is so far advantageous, that the place would not be compelled to surrender for the necessity upon the part of those works being taken by the besiegers. The encoignure consists of a long curtain, either quite straight or broken by two short flanks; and at the angles of the polygon are small bastions-towers of masonry (G, fig. 3), in whose flanks are formed casemates to shelter the defences of the encoignure, and from which the engineer died in 1707, at the age of 74 years; and, from his time, the French fortification has been that of all Europe.

It would be improper in this place to omit the name of Germain, who was a contemporary of Vauban, and who is also distinguished by the invention of three methods of fortifying places; of which however the first only, and that partially, has been put in execution. The outline of the plan differs but little from that of his rival's first system, but the shoulders of the bastions are strengthened by large towers, or orllons, containing casemates. In the interior of each bastion is another, on a higher level, and on the exterior is a counter-guard, or detached work, consisting of two faces. A large ravelin, in the form of a half circle, is placed before the curtain, and the whole is surrounded by a broad covered-way, whose places of arms are retrenched by brick redoupts. The ditches are full of water; and the terrepleins, as well as the bastions and ravelins, are formed of a covered-wall or parapet, and the surface of the ground, so that it would be impossible, in the marshy soil on which the fortifications are supposed to be constructed, for an enemy to dig trenches there in order to form covered approaches. The terrepleins of the principal works are also well protected by the encoignure or walled galleries which cross them, or which are formed within the masses of the ramparts.

It should be observed that the salient points E, F, &c., of the bastions and ravelins in Vauban's system being nearly equally distant from the centre of the bastion, the breach executed by the besiegers to connect the glacis before the former works will also connect that which is before the latter; and that, in consequence of this construction, breaches may be formed, and assaulfs made, at one time, in the encoignure and outworks. With the view, therefore, of preserving the former untouched till some time after the ravelins may have been taken, the French engineer Cormontaingne proposed, about 30 years after the death of Vauban, to advance the salient points of the ravelins as much as possible, so as to increase the ultimate limit which a regard to the due magnitude of the flanked angle will admit. Thus the magistral line of his ravelin is determined by the sides of a triangle whose base is a line joining two points on the faces of the collateral bastion, and whose height is equal to the flanked angle; that is, the distance of the angle is equal to about 70 degrees. By this construction it would become impossible for an enemy to crown the glacis of a bastion till he had got possession of the two collateral ravelins, on account of the fire which, from these, might be directed upon him; and the fall of the place would be delayed by the time spent in conducting the approaches from the ravelins to the intermediate bastion.

In order that this benefit might be obtained in the highest degree, Cormontaingne suggested the propriety of fortifying places on polygons of the superior kind, and even, when possible, of constructing two or more fronts of fortification on one straight line; this practice would have the additional advantage of rendering the flanked angles of the bastions equal to each other, which is a point of those works permit stronger retracements to be formed in them, but the faces being produced outwards, would tend to points on the faces of the ravelins, and thus would be completely secured from the enfilading fires of the besiegers. Besides what has been more generally described, the French engineer made several improvements in the details of the works. He made the flanks exactly perpendicular to the prolonged faces of the collateral bastions, for the sake of a more complete flanking defence. He made the terrepleins of the ravelins merely wide enough to contain the artillery of the defenders; in order to increase the capacity of the redoubt in the ravelin, and to deprive the enemy of the space necessary for a battery on the ravelin, by which he might break that redoubt. He also gave large casemates to the latter work, in order that a party of engineers might be sent thither to harass the enemy, if he should attempt to mount the breach in the face of either bastion before he had got possession of the redoubts as well as of the ravelins themselves. But the construction of the work was made by the French engineer in adding to each of the re-entering pairs of arms a spacious redoubt, which would render the defence of that place more obstinate, and cover the passage between the tenaille and the flank of the bastion.

As Dillenius's work was published at Frankfort, he proposed a method of fortifying places, which consists in surrounding them by lines of rampart forming with each other a series of angles alternately salient and re-entering; and, subsequently to the time of Vauban, a few other processes of a like nature have been invented. The most remarkable of these is that which was published in 1776 by the French General Montalembert, who entitled his method Fortification Perpendiculaire. It's outline on the plan is a series of the sides of equilateral triangles formed on those of a dodocagon inclosing the place; the re-entering angles
being consequently right angles: and, as the general has developed some useful ideas concerning the interior defence of a place, though no existing fortification affords an example of the method, a short description of it may with propriety be given.

Three parallel ramparts of earth, of the form above indicated, and separated from one another by wet ditches, surround the place: the berme at the foot of the first and third is protected by a simple wall, and that at the foot of the middle rampart is covered by a loop-holed gallery on its whole length. Beyond the outer ditch is the covered-way, whose re-entering angles are fortified by strong redoubts. In the re-entering angles of the two interior ramparts are formed casemated batteries, the fires from which would sweep the surfaces of the ditches in front, in the directions of their lengths; and, within the encouter of the place, a circular redoubt, or tower, of brick-work, carrying several tiers of guns, is intended to defend the interior rampart, if, at length, it should be forced. The merit of this system is supposed to consist chiefly in the powerful fire which the assailants would afford, as from their situation, they would scarcely be injured by the enemy; in the difficulty which the latter would experience in getting over the detached walls; and in the great force which the defenders, by means of the spacious communications, might bring up to oppose the assailants.

During the existence of the French empire, the celebrated Carnot proposed to restore the balance between the attack and defence of fortresses, which the inventions of Vauban had made to preponderate greatly in favour of the former, by means of powerful sorties from the place and an abundant discharge of stones and balls from mortars fired at considerable angles of elevation; thus annoying the besiegers in their trenches, and either putting great numbers of their men hors de combat, or compelling them to recur to the slow process of blinding their approaches. Adopting, in his method of fortifying places, the principles of Corinna, and for the plan of his bastions, but making the whole length of his front of fortification equal to 480 yards, he detached the bastions from the enceinte, which he made to consist of a simple polygonal rampart of earth. In rear of the enceinte between the bastions he placed a fausse-braye, whose exterior side was to be protected by a casemated tower at each extremity; and, behind the gorges of each bastion, he formed a row of casemate vaults, in which the mortars were to be placed for throwing stones, &c. into that work when gained by the enemy. Adopting also the ideas of Montalember respecting detached walls, he proposed to surround the enceinte by one, which was to be loop-holed in order that a fire of musketry might be made from it, and to construct a similar wall before the fires and flanks of the bastions. The bastions were to be covered by narrow counterguards; a cavalier, or lofty redoubt, in front of the enceinte, was to defend the collateral faces of both bastions and counterguards; large ravelins were to cover the central parts of the fronts of fortification and afford crossing fires on the ground before the bastions; while mortars placed on the faces of the work and on the berbetes at the angles were to discharge their missiles over the parapets. A ditch surrounds the whole, and its exterior side is made with a gentle slope from the bottom to the level of the natural ground in front, for the purpose of facilitating the sorties; the corresponding facility which the enemy might have for descending into the ditch being disregarded on account of the supposed impossibility of maintaining himself there under the hail of stones and shot from the works.

It was supposed that the detached wall, being covered as before mentioned, would present an impassable obstacle to the assailants; but an experiment made at Woolwich in 1824 has proved the possibility of breaching it by a fire of shot and shells, directed over the parapet of the counterguard, from artillery of great calibre, at the distance of 400 yards from the latter work. The efficiency of the vertical fire, as it is called, of stones and shot from the works has also been controverted; and experiments have been made which seem to prove that the momentum acquired by the missiles in their descent would not be sufficient to do serious injury to a man on whom they might fall, if he were protected by a proper head-piece.

Plan of a Front of Fortification according to the Method of Corninna.
Soon after the commencement of the revolution, Bossu-
maid, a French officer, who had entered the service of
the king of Prussia, proposed to curve the faces of bastions
on the plan, in order to diminish or prevent the effect of the
ricochet, and to build casemates in the flanks of the enceinte
for the purpose of more effectually defending the main
ditch. But his principal improvement consisted in extend-
ing the covered way and glacis along the whole of the
enceinte, and in placing the ravelin with its proper covered
work, and the escarpe ditches, outside the lines of the
bastions; for the disposition it would be impossible for the besiegers
to breach the bastion by firing along the ditch of the
ravelin, while the latter would possess all the advantages attending
the greatest possible saliency. The plans of Bousmadi's
approaches to the defences of the town were adopted by
General Chasseleup de Labat, in the works which he ex-
cuted, by order of Napoleon, to strengthen the fortifications of
Alessandria; and the same engineer constructed a strong
polygonal range of earth in each of the places of a
hand in a attack of the bastions and ravelins, in order to
increase the quantity of crossing and reverse fires in
front of the works.

The last modification of the bastion system which it will
be necessary to mention, is that proposed by Chouara,
who, partly to diminish the pressure of the parapets on the
escarp revetment, and render the formation of a practicable
breach more difficult, and partly to procure a close fire of
musketery into the covered-way, suggests that a torreclein, like
the regular muskets, should be placed near the
ravelin, to work to protect the defenders, should be left on the ex-
terior of the parapets. The same engineer recommends that
the flanks of the bastions should be lengthened by con-
tinuing them within the line of the curtain, and that they
should have a more moderate relief than those of
Vauban, in order to make a fire of artillery might be directed over it against the works
of the enemy: he proposes also that a glacis of earth should
be raised in the main ditch, high enough to mask the foot of
the escarpe revetment, and prevent it from being battered
by fire of artillery on the crest of the covered-way.

It is scarcely probable that any existing fortresses will be
demolished for the sake of the advantages which would
result from a re-construction according to any of the
methods which have been proposed since the time of
Vauban; but if any of those castles which may present itself for
fortifying a town or military post of importance, it may be
found convenient to adopt some improvements in the con-
struction of the works. Thus, the general system of
Vauban, with the modifications proposed by Cormontaigne, being
retained, the casemates on the external angles of the enceinte
of a fortress, might be formed in the re-entering angles of the
enceinte or teailles; and detached walls or galleries for
musketery in some of the dry ditches: detached ravelins, as
proposed by Bossu, may be constructed beyond those of
Vauban, in order to render the lines not being breached at the first crowning of the glacis; and
direct defence of the covered-way may be obtained from
galleries formed within, or on the exterior of, the parapets
along the faces of the works.

In the case of a fortified place it is evident that the
loss of life would be so much the greater as the defensive
works are stronger and better combined; and, in conse-
quently, the necessity of making the approaches under
cover to the last moment of the siege would become more
important.

For the works occasionally constructed beyond the glacis
of a fortress, see Fleche, Horn-work, Lunettes, and
Tenailles.

Ravelins which fall under the denomination of field-
fortifications are, Bridge-heads have been already mentioned.
Redans, Redoubts, and Star-forts are described un-
der those words; and the combinations of works which
serve for the protection of armies, under Lines of Ex-
territory, are described with the forts which are considered as field-fortifications: their plan is similar to that of the enceinte of a fortress; but they differ from
the latter in their size, in having low relief, and in the sides of
their ditches being un-revetted, or only faced with sods.

Fortiguerra, NICOLO, an Italian prelate, whose
writings display little of the austerity or seriousness of a
churchman, was born at Pistoja, November 7th, 1674. In
his youth he studied jurisprudence, and afterwards distin-
guished himself by his attainments in Greek. Having
published a funeral discourse in honour of Innocent XIII,
he was appointed secretary to the papal nuncio in Spain,
and on his return to Rome, in consequence of his ill-health,
had a situation as one of his chamberlains bestowed upon
him by Clement XI in 1712, and was likewise made
an officer of the church of St. George in the Lateran.
But another pope (Clement XII.) he expected to be raised to the dignity
of cardinal; but although an encourager of both poetry and
poets, that pontiff evaded from time to time the fulfilment
of the promise which he appears to have made, until Forti-
guerra gave up the vain hope. This prelate published several
poems in thirty cantos. This production, which was first
published with its author's name Greekized into Car-
tenmaco, was begun by him without any plan, merely by
way of proving with what facility he could imitate Ariosto, Paolo,
and Berni, both in regard to style and the invention of incidents;
when, at the instance of those friends for whom the first canto was hit off as a specimen, he was
induced to proceed till he completed the whole, at the rate,
so as, being assured of a canto per day. Little, therefore, is it
to be wondered at that the plot should be so delusive
and the incidents so extravagant. Yet, notwithstanding the
proteaneness of the characters and events, and likewise
the occasional carelessness of the style, this long
inventare poem abounds with so much comic humour, dull
wit, and quip, that it is impossible to conceive a
more absurd piece of work of this kind, and has
gained its place as a classical work of its kind, and has
gained its place in the course of the ages.

The history of the Fortes, or fortresses, is one of endless
interest and instruction; but a work on the subject
would be out of place in this collection. It
is sufficient to remark, that the fortifications of
all modern states are so vastly different from those of ancient
times, that it is not to be expected to find much
in the work on this subject in the present day.

MONSIGNOR Fortiguerra, the historian of the
fortresses of the prelates of Rome, states, that he
was sent by the pope to the Lateran to
assist in the work of the fortifications of the
church, and that he devoted himself to the same
work for the next twenty years.

The history of the fortresses of Rome is one of great
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It was decorated with temples, statues, basilicas, curia, rostra, triumphal columns and arches, which usurped the place of shops, schools, and even private houses, that originally stood in this forum. In the forum were the rostra, or pulpits, decorated with the backs of ships, whence the orators harangued. According to Appian the rostra were placed in the middle of the forum, and he states that Sulla caused the head of young Marius to be hung up before the rostra in the middle of the forum. Varro, in his fourth book, ‘De Lingua Latina,’ places the rostra before the curia, which was near the Comitium, so that the orators would stand with their faces towards the capitol; but Plutarch, in speaking of the Grucchi, states the reverse to be the case.

The Comitium was placed near the Curia; three columns of the former, commonly called the Temple of Jupiter Stator, still remain. Nardini places on the side of the Palatine hill, in succession, the Fabian arch, Grocостасиа, Sensus, Basilica Oppia, Abodicula of Concord, Temple of Romulius, Temple of the Div Penates, Curia Ostilia, near which was the Comitium, Basilica Portia, Temples of Julius Caesar, and Castor and Pollux. On the side towards the Tiber stood the Temples of Jupiter Stator, Temple and Atrium of Vesta, Basilica Julia, house of Lucius Turquiniius, and the Temple of Victory. On the side of the capitol was the arch of Tiberius, the temples of Saturn, of Concord, and of Vespasian, the school of Xanthus, the arch of Severus, which still remains, and the Tullian prisons. On the north side of the forum was the office of the secretary to the senate, and the Basilica of Paulus Emilus. There are however but few remains existing of a small number of these numerous buildings, and the greater part have entirely disappeared.

A single monumental column stands near the Comitium, called the Column of Phocas. Besides these buildings there are remains of the temples of Fortune, Jupiter Tonans, Jupiter Capitolinus, the Temple of Venus and the Basilica not within the boundaries of the forum. (See plates in Nardini’s Rome, vol. ii. lib. v., c. 1.) A very beautiful restored view of the Forum Romanum was made by Mr. C. R. Cockerill, and a reduced view was engraved and published, with his permission, in the second volume of the ‘Pompeii,’ published by the Society for the Diffusion of Useful Knowledge, to which we refer our readers for an accurate notion of the splendour of the accumulated architecture of the Forum and the Capitol, and its vicinity.

The forum at Pompeii, which was constructed in the Greek style, cannot however be altogether considered, if we are guided by the authority of Vitruvius, a truly Greek Agora, which this author states was to be made square in form. It has however many Greek features. The Pompeian forum is of an oblong shape, surrounded on three sides with rows of columns, forming, with the advanced columns of the various buildings, a colonnade or ambulatory; above this there was a second, if we may judge from the remains of stairs at several places at the back of the colonnade. The fourth side of the forum is inclosed with two arches placed on each side of a large hypaethral temple, called the Temple of Jupiter. On the west side are the prisons and the granary, with an enclosed court before it and the prisons; the Temple of Venus and the Basilica [Basilica]; and on the narrow side, opposite the Temple of Jupiter, are three buildings generally considered to be the Curia and Atrium: on the east side is an enclosure, the use of which has not been determined, the Chalcidicum [Chalcidicum], and a building supposed to be a large eating-house, generally known by the name of the Pantheon, in front of which are the Tabernae Argentariae. The enclosed area of the forum was paved with large square pieces of marble, and the sides of the area were enclosed with stairs, opposite the curia, and a short way from them is a small triumphal arch. The forum was closed at night with iron-barred gates, and it does not appear that chariots were admitted into it, as the pavement of the streets terminates at the back of the colonnade. The columns were in rows, and the architraves were most probably of wood, as we may infer from their...
main. The frontispiece to the first volume of the 'Pompeii' is a restored view of the forum, which gives an idea of the double colonnade, or upper and under ambulatory mea-
tioned by Vitruvius, an echo of a Greek Age. 
FOSCOLO. UGO, was born at Zante about the year 1777, of a Venetian family settled in the Ionian Islands. When yet a boy he lost his father, who was a physician and inspecter of the hospitals at Spalatro in Dalmatia, and he returned to Venice, and at this period, he was sent to study at Padua. Having left that university without having made up his mind to any particular profession, he returned to Venice, and wrote a tragedy, 'Il Tesei,' which was performed in January, 1794. In that same year the republic of Venice was deprived of its last mainland possessions by the French; and Foscolo, who, like others of his countrymen, had expected the establishment of a new and popular republic, felt bitterly disappointed at the conqueror giving up Venice to Austria. At Milan, and later at Zurich, he published a part of the 'Lettere di duo Amanti,' afterwards published under the name of 'Lettere di Ortis.' This work, of little value as a novel, possesses a higher sort of interest from the political allusions, the busts of inventive, and the pictures of the state of the country. The language is beautiful and the tone affecting, though perhaps too querulous and desponding; but as such it was in harmony with the then prevailing feeling. The 'Lettere di Ortis' had a prodigious success in Italy; but all the editions were soon burnt. He resided at Zurich till 1802, and that of 1814, which Foscolo himself published at Zurich with the date of London, which alone contains, among several passages left out in the other editions, the letter dated 17th of March, 1798, in which Foscolo clearly expressed his opinion of Bonaparte, as 'the greatest man since the age of the ancients.' Foscolo served as a volunteer in the Lombard Legion through the disastrous campaign of 1799, and followed the French in their retreat to Genoa, where he remained during the siege of that city till June, 1800, when the garrison capitulated, and the legionaries, including Foscolo, were sent to France. The same time the battle of Marengo took place, Lombardy was re-conquered, and Foscolo repaired to Milan; peace being concluded soon after, he returned to private life, and to his literary pursuits.

In 1806 Bonaparte having called together at Lyon an Italian deputies in order to devise a new constitution for the Cisalpine republic, Foscolo was requested by some individuals then in office, to write an address to the First Consul, with an exhortation to the nation, and the wishes of the people. He did write it, but in a very different strain from what they expected: he wrote it in the style of the Philippians, or the Verne Orations of Cicero; he drew an eloquent but fearful retrospect of the operations of that year, and a prediction of every event which the people of Italy had suffered at the hands of the various military and civil authorities appointed by the French since 1796; the disgraceful persecution of the clergy and the so-called aristocrats, and other abuses of power. The oration was not accepted at the First Consul, but it was published some time after at Milan—'Orazione di Bonaparte pel Congresso di Lione.' it forms an important memorial of the times, and an honourable testimonial of the uncompromising spirit of Foscolo, who seems to have taken Dante and Ariosto for his models. Foscolo remained for some years quietly at Milan under the mild administration of the vice-president Melzi. He published an Italian version of Callimachus 'De Como Benevi,' with interesting notes and commentaries.

In 1807, an Italian regiment which formed part of the army assembled near the coast of the British Channel for the intended invasion of England. Being stationed at St. Omer he there attempted an Italian translation of Dante's 'Purgatorio,' in which he was most successful. When a few months after the camp of Boulogne was broken up, Foscolo went back to Milan, and did not return into active service. He lived for some time near Brescia, where he wrote his poem, 'Dei Novelli.' 1807, depreciating certain barbarous regulations which forbade any monument or memorial being raised over the bodies of the dead. This beautiful little poem, full of lofty thoughts and lively power, was dedicated by the author to a brother poet, Ippolito Iacopone di Verona, and it served to distinguish him among the Italian Latin hexameters. It was commented on, imitated, and even trans-

In 1808, Foscolo being appointed professor of Italian eloquence at Pavia, was privately urged by some official persons to begin his course by some tribute of praise to the emperor Napoleon, according to the received custom. It was hinted to him that the devotion of the Legion of Honour would be the reward of his compliance. Foscolo remained unmoved: he took as the subject of his inaugural oration the origin and the object of literature, 'Dei Origine e Volontà della Letteratura,' and dedicated the volume to the new emperor, and civil duties of literary men; on the nobleness of their calling when conscientiously exercised; and he exhorted the Italian youth to devote themselves to literature for its own sake; to study ancient literature, and to write and live as Dante, Machiavelli, Galileo, and Tacito; to bend over their tombs and learn from those illustrious dead how they felt the sacred fire of genius through persecutions, torments, and exile, in the glory of the Russian name went to save its country from poverty, and how they were supported in their trials by the love of their country, of truth, and of fame, which enabled them to leave to posterity the rich legacy of their works and the benefit of their example. This address, delivered 1808 he was a numerous audience, produced a thrilling sensation, and was followed by bursts of applause. Not a word had Foscolo said about emperor or prince, government or minister. A few months after the chair of Italian eloquence was suppressed in all the universities of the empire, and Foscolo, whose name was printed at Venice near Como, where he enjoyed the society of Count Gros and his family. He there wrote his tragedy of 'Aji,' which was performed at Milan, and not only proved a failure, but involved him in a sort of ministerial persecution. He wrote it to re-open Bonaparte a conqueror, and to raise Napoleonic ambition. At the same time some academicians whose pedantry he had ridiculed in another work, expressed their opinion in the Poligrafio, a literary journal, that whoever sneers at the labours of professors, seeks a settled and liberal station, knows nothing of the true nobleman, and that he never prevents the monarch who protects them, and becomes, by so doing, guilty of treason.' Foscolo however had some influential friends, and he was merely banished from Milan. At Florence, where he fixed his residence, he completed another 'Sierramento di Sierramento'; "Vagheggiando 'in Venetia lungo la Francia, traduzione di Didimo Chierio,' and wrote another tragedy entitled 'Ricciarda,' a Hymn to the Gods, and other compositions.

In 1809 he was of the opposite to return to Milan, and in the following year, when the French abandoned the country and a provisional government was formed, Foscolo was appointed major on the staff, and encouraged, though indirectly, to save the ex-minister Prina from the fury of the Napoleonic army. He was a member of the committee of the Milanese republic, and in 1809, Foscolo drew up a protest in the name of the inhabitants of Lombardy addressed to the Allied Powers. He remained however still at Milan, and had the offer from some of the Austrian authorities of the editorship of a new periodical issued by them. He refused the offer, but his sympathies were with the patriotic cause of being a turncoat, he, on all a sudden, disappeared from Milan towards the end of 1814, and repaired to Switzerland, where he resided for almost two years, chiefly at Hottingen, near Zurich, where he published a correct edition of his national letters, and also a Latin prose, entitled 'Didymi Clerici Prophetae Ministei Hypercallycos,' in which he dashed his Milan enemies of the literary and courtly officers who had annoyed him about his 'Ajax.' Not finding sufficient encouragement from the Austrian government for the restoration of subsistence, he came to England about the end of 1816, and was introduced to some of the best society of the metropolis: he formed literary connexions, and wrote articles both for the Edinburgh and the Quarterly Review. In London he published his 'Discono Storico sul testo di Doccmano,' the 'Discono Storico sul testo di Dante,' which is a new edition of Dante, in which he had engaged to some extent on the edition of Dante, with ample comment, but he did not live to finish this work. Want of order and of judgment in money matters involved him in embarrassments, which joined to his fretful temper and insidious application, showed his want of an active mind, and he was again reduced to poverty. He died at Turnham Green, near London, being about fifty years of age, and was buried in Chiswick churchyard, with a plain marble
slab and inscription over his tomb. Notwithstanding his eccentricities he secured wherever he lived some warm and lasting friends, who felt his death as a loss. The life of Foscolo derives a peculiar importance from the times in which he lived, and the political scenes in which he mixed. He had the merit of standing aloof from the two factions, and the generous spirit of mankind. He was born in Venice, close before the shrine of Napoleon. 'His unconquerable silence,' observes a by no means partial biographer, 'amidst the strains of vulgar adulation, deserves to be recorded in history. If amidst the Asiatic idolatry towards Napoleon, all kind of opposition can be said to have existed in Italy, Foscolo must be considered as the leader of it. Among a crowd of literati who prostituted their character, he alone succeeded Alferi in gathering around him those youths who felt the love of study and independence, and the sentiment of national power, he tempered with his principles and his example their souls for present dignity and future resistance.' (Pecchio, L'età di Ugo Foscolo.) When the reaction came he refused likewise to associate with those who would not restore his country to national independence. But the days of Foscolo, 'if they be yet, are not far distant.'

FOSSANO, a town and bishop's see of Piedmont, in the province of Cuneo, is situated in a fine plain on the right bank of the river Fossano, which rises in the Alps, and on the road from Mondovi to Savigliano. A canal, called Naviglio Nuovo, which leaves the Stura at Cuni, and joins the Pô at Carmagnola, passes by Fossoano. The town carried on a considerable trade in corn, silk, hemp, and cattle, and farm produce and animals, which are driven along some parts of the road. The branches of this road, if any, are not ascertainable. (Reynolds's Ita Britanniam.)

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genera, and species, are treated of under their respective heads.

FOSSUM, in the bailiwick of Christiania in Norway, a
mining town and district, about 40 miles west of Christiania, near the Houg-Foss, the largest fall in Norway, over which the Semoon is precipitated nearly all its length. In the vicinity there is a works and a cannon foundry, and at Mudder, near it, is a large manufactury of smalls, zaffres, &c., which are made from the superior kind of cobalt, found in the neighbouring mine at Sutterdal.

FOUGERU, JOHN, was born of a Quaker family, on the 8th of March, 1712, at Carr-End, near Richmond, in Yorkshire. After obtaining the elements of education in the school of Sedbergh, in the same county, he learned pharmacy from an eminent apothecary named Bartlett, and then studied medicine. He took his degree of M.D. in 1737, the thesis which he published on this occasion being on the use of emetics. ('De Emetiorem Usu in variis Morbis tractandis."

In order to become a physician in practice as well as theory, he now diligently attended St. Thomas's Hospital, in London. In 1740 he travelled into Holland, France, and Germany, and then settled in London. In 1748, an ulcerated or gangrenous sore throat, which had prevailed epidemically, gave Fothergill an opportunity of displaying his great practical talents. This kind of sore throat is now believed to be related to scarlet fever, and indeed to be the essential and dangerous part of that disease, of which the eruption is merely the outward and harmless indication. In Fothergill's time, however, this malady was confounded with the ordinary or infectious sore throat, and being accompanied with bleeding and purgatives, was very fatal. Fothergill, on the contrary, used emetics, mineral acids, bitters, and a little wine, and lost but few cases.

The two most prominent points in the life of Dr. Fothergill is the success with which he practised his profession and the unwaried benevolence with which he distributed the fruits of his labours. It is supposed that he gave away at least 200,000l.

Dr. Fothergill published several papers in the 'Philosophical Transactions' on the origin of ambergris, the rupture of the diaphragm, &c.; and he is also the author of essays on the plant producing Aleppo saumony; on the use of bark combined with small doses of calomel in scrophula, and calomel alone in sciatica, lumbeago, and worms; on the use of horehound in cancer; on the botanical, chemical, and medical history of the cortex Winteranurs and catechu; on the treatment of hooping-cough by very small doses of tartar emetic combined with an absorbent earth; on dropsy, and the disadvantages of putting off tapping too long; on claudicating legs, on palsy of the tongue, on the use of balsams and bark in this disease; on febrile rhumatism of the face; on angina pectoris; on the ulcerous sore throat; on hydrocephalus internus, an essay thought by Vieg-d'Azly to be impossible; on the use of lye for destroying insects; and advice to women between forty and fifty years of age, or rules to be observed on the cessation of the catamenia.

Fothergill improved the art of recovering the drowned; altered the necessity of prohibiting burials in towns, and the means of diminishing the frequency of fires. The editions of his works are those of London, 1781, 8vo.; 1783, 3 vols. 8vo.; 1784, 4to. Fothergill died on the 26th of December, 1786, in the sixty-ninth year of his age. (Biography, under the title of Fothergill.)

FOTHERINGAY, [Northamptornshire.]

FOUCHE', JOSEPH, duke of Otranto, was born in 1763, at Nantes, and educated in the college of the Peres de l'Oraire. Being unable, on account of his delicate constitution, to study the professions of a lawyer or captain of a vessel, he applied himself to study, and after having completed his course at Paris, he lectured in different towns of France on various philosophical subjects, till on his marriage he finally settled in his native town and pursued his profession as an advocate. In 1790 he was turned by the department of the Loire Inférieure as a member of the national convention, in which capacity he voted for the death of the king, and against the appeal to the nation. In 1793 he was sent with Collot d'Herbois on the mission to the United States to inform the president that the people of France were rising against the king, but having the courage to oppose some measures of his infamous colleague. On his return to Paris, he was elected (1794) president of the Jacobin club, but he was soon expelled from it by the comity of Robespierre. After the fall of Robespierre, Fouché being considered as a dangerous terror, was arrested, but afterwards liberated under the proclamation for a general amnesty, on the 26th October, 1795. He remained in private life till 1798, when he was nominated governor of France by the Directory. In the same year he was nominated minister of the police of the republic. It was in this capacity that he displayed his great talents, which were united with an extraordinary degree of courage, firmness, and activity. He had the boldness to adopt various measures for the suppression of popular conspiracies. Having supported Bonaparte after his return from Egypt, he was confirmed in his office upon the establishment of the consulate. He had the address to render himself necessary to all parties by tormenting Bonaparte on the one hand, and the royalists on the other. In 1800 he refused the post of governor of the outer departments, with the views of screening from his vengeance many royalists. Bonaparte however dismissed Fouché in 1802 from his office, on his accession to the throne, he restored him to his former post. Fouché's vigilance maintained the tranquillity of the empire while Napoleon was occupied in foreign wars, and having the duties of minister of the interior added to those of his office, he greatly contributed by his arrangements to prevent the success of the English expeditions against Holland in 1803. In the last-mentioned year he was created Duke of Otranto, but he was suspected of having used in his proclamation to the national guards the following expression—'Let us prove that Napoleon's presence is not necessary in order to rebel against us.' In 1810 he was nominated governor of Rome, on condition of his delivering up to the French army the allied troops stationed in his province. He was nominated minister of foreign affairs, and having refused to do so, he was sent to Aix. He was again recalled; but as his views did not coincide with those of the Emperor, Fouché retired into the country. In 1813 Fouché was made governor of the Ilyrian provinces, but the princess of Ashburnham, who was the heiress of all the allied troops stationed in his province, forced him to resign his post and to retire to Italy. After the abdication of Napoleon, Fouché again retired to his estates in the country, and refused to take any part in political intrigues. On Napoleon's return from Elba, he was suspected, but his position was so strong that the Bourbons would not dare to touch him. As learned that the congress of Vienna had declared against Napoleon, he tried to persuade the emperor, in case his negotiations should prove unsuccessful, to abdicate and retire to the United States of America. He strongly urged the principles of liberty during the first session of the National Convention, and even more strongly urged the emperor to abdicate after the battle of Waterloo. Fouché being put at the head of the provisional government by the chambers, promoted the departure of Napoleon, begged the king to give himself and his ministers, and to abandon the scheme of Carnot and other patriots to defend Paris. At the beginning of the negotiation he was not inclined to promote the second restoration of Louis XVIII.; but notwithstanding this he was called by the king, immediately after the capitulation of Paris, and nominated minister of police. This circumstance gave rise to a general belief that he had deceived Napoleon all the time after his return from Elba, and that he constantly maintained a secret correspondence with the allied powers and the Bourbons. In the capacity of minister of police he proposed two reports on the state of France, which by their boldness excited the hatred of all parties. His advice to grant a general amnesty was not followed; and he signed with his own seal as minister of police the ordinance of Louis XVIII. the 24th day of May, 1815, by which all those who had voted for the restoration were excluded from the amnesty. Being driven by the hatred of the royalists to resign his office of minister of police, the king nominated him his ambassador to Dresden. The king was killed on the 12th January, 1816, by which all those who had voted for the restoration were excluded from France, and deprived of the estates which had been granted to them, was extended to Fouché also, who from that time lived in different parts of Austria. He died at Dresden in 1830. 'The Memoirs of Joseph Ant. Fouché, Duke of Otranto', by his son, has been declared to be a spurious production; but there are many reasons for believing them to be authentic, and it is a known fact that he dictated his memoirs to his secretary Desmettes.
A curious work was published at Paris in 1833, which throws great light on Fouquet's character, and on the system of the great French policy of the period. The 'Histoire des contemporains, ou quinze ans de police sous Napoléon, par Desmarais.'

FOUGASS, a small military mine, formed by sinking in the ground to a depth not exceeding 10 feet, a box of powder, or other containing vessel, of loaded shells. The train of powder by which it is to be fired is contained in a linen tube, and this is frequently protected by being placed in a case of wood. A trench is cut in the ground to receive the train, but it is subsequently filled. "Observations historiques, ou quinze ans de haute police sous Napoléon, par Desmarais."

FOUGGERES, a town in France, capital of an arrondissement, in the department of Ille et Vilaine. It is on the left bank of the river Couesnon, 160 miles in a direct line from Paris. Raoul of Fougères built a castle here in the twelfth century in place of one destroyed by Henry II. of England. Fougères was taken by the English under John in the year 1202, and again in the reign of Henry VI., in 1448. The town is now a little trading town, and is little noted for its height or for its position, but for a few miles to its elevated situation a pure atmosphere and an agreeable prospect. It is not very well laid out, and there is no place or open space of any extent; but some of the streets are wide, and the houses are very well built. The ruins of the castle, however, remain in one of the suburbs; its Gothic towers and ramparts form a picturesque object from some points of view.

The population of Fougères in 1832 was 7446 for the town, or 7677 for the whole commune. The principal manufactures are the weaving of wool and flannel, hats, and leather, and the manufacture of itinerant goods. The town is at the confluence of several roads. There are in it a subordinate court of justice and other public offices, a high school, and public baths. In the forest of Fougères, about half a mile north of the town, there are three remains of iron mines, and the village being situated on the north side of Cape Palmas as far as the banks of the river Senegal. Some of the tribes are found 400 or 500 miles from the coast. They do not however occupy this tract alone, but together with three other nations, the Mandingoes, Sarawellins, and Jalloffs or Yalloffs. The principal kingdoms of the Foulahs are Fouts-Toro, Bondou, Casson, Ladihner, Kaarta, and Foulalou, on both sides of the Senegal, and south of the sources of the Gambia, the great kingdom of Foute-Jalloro. The countries east of the last-mentioned nation are little known, but it would appear that the Foulahs extend to the very boundary of the kingdom of the Ashan-ces.

Fougasses are sometimes employed in the defence of fortified posts, and then they are formed under the glacis at the point where the assault is expected: in this case generally the train of powder is conveyed under ground to the point of the parapet; but occasionally this is done in the interior of the work, the train being then made to pass under the bottom of the ditch.

Sometimes a fougass is used to destroy a small work, in which case it is sunk within the mass of the rampart or parapet.

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Major Gray describes the Foulahs of Bondou as being of the middle size, well made, and very active. Their skin is of a light copper colour, and their faces of a form resembling nearer to those of Europe than any of the other tribes of Western Africa, the Moors excepted. Their hair too is not so short or woolly as that of the black, and their eyes are, with the advantage of being larger and rounder, a better colour. Their mode of clothing is to wear a cassock, which serves, that at Bondou and in other parts in the vicinity of the Moorish territories, their complexion is more yellow than in the countries farther south. In speaking of the Negro nations, they rank themselves among the white people. The principal occupations are the cultivation of cattle, and agriculture. Even on the banks of the Gambia, in the territories of the Jollofs, and other tribes, the greater part of the corn is raised by them, and their herds and flocks are numerous, and in good condition. In the northern countries they have merely established the cultural faith, and send their children to schools, in which they learn to read and write. In the southern countries they are still heathens. They speak a peculiar language, different from those of the other nations among which they are settled. (Mungo Park; Goldberg; Gray.)

FOULIS, ROBERT AND ANDREW, two learned printers of Scotland, were, it is supposed, natives of Glasgow, and passed their early days in obscurity. Robert is ascribed to having been a hark of a hawker's box, and later he became a printer. The other veracity enabled them to establish a press, from which have issued some of the finest specimens of correct and elegant printing which the eighteenth century has produced. Even Bonfils, who, in the course of his productions, produced for thirty years a series of correct and well printed books, particularly classifications, which, whether in Greek or Latin, are as remarkable for their beauty and exactness as any in the Aldine series. Among them may be enumerated Homer, Greek, 4 vols. Ed. 1726-58; Thucydides, Greek and Latin, 8 vols. 12mo. 1793; Herodotus, Greek and Latin, 9 vols. 12mo. 1761; Xenophon, Greek and Latin, 12 vols. 12mo. 1762-67; with small editions of Cicero, Virgil, Plutarch and Propertius, Cornelius Nepos, Livy, etc. These and other books, which may be added a beautiful edition of the Greek Testament, in small 4to.; Gray's Poems, Pope's Works, &c. &c.

It is a melancholy reflection that the taste of these worthy printer, which for the fine arts was so advantageous to Scotland, having engaged in the establishment of an academy for the instruction of youth in painting and sculpture in Scotland, the enormous expense of sending pupils to Italy to study and copy the antient, gradually brought on their decline in the printing business, and they founded the city of Glasgow no fit soil to transplant the imitative arts to, although their success in printing the Greek and Latin Classics had already produced them ample fortunes. Andrew Foulis died September 15th, 1775, and Robert in 1776 exhibited at Christie's, 7 Pall Mall, the rarest and most valuable prints. The catalogue formed three volumes. But the result of the sale was, that after all the expenses were defrayed, the balance in his favour amounted only to the sum of fifteen shillings. He died the same year on his return from Italy. He was the descendant of one of the brothers, continued to print at Glasgow as late as 1806. His Virgil by 1778, and his Aeneidus, printed in 1795, are considered beautiful productions. (Lemoine's Hist. of Printing; Nichols's Lit. Anecd. vol. iii. pp. 591, vol. iv. 592; Chalmers's Reign of George III.)

FOUNDATION, the lower part or course of the basement wall or piers of a building. In foundations it is of the utmost importance to prevent the settlement of the walls in an unequal manner; this can only be done by making the earth on which the foundation is set equally solid throughout its whole extent.

If the earth, when excavated to a sufficient depth to form
a good hold for the wall which is to be built in it, should not be soiled nor should likely to swell or shrink with the change of temperature, as clay is apt to do, and if the superimposed might be placed flat on the foundation is considerable, it is advisable to make driving pieces of timber into the excavation. The thickness of piles should be about a twelfth of their length, and that their depth depends on the strength to be plated upon them. Sometimes a level root of cross-section of the required is laid on the piles, and the spaces between them are filled with stone or brick ramped up to the level of the upper faces, and then the whole is plastered over. On the planking are laid the footings which are worn than the wall and project one beyond another, the lowest being the widest (thus).

This is done to prevent the wall from sinking with the weight into the earth, or working with the wind. In footings from two to four courses of footings are usually employed. Invis or inverted arches are often used between the layers of piers, to distribute the weight more equally along the whole line excavated for the foundation. With this the earth is more compacted above the wall. If the wall is supported on narrow piers, a piece of timber is sometimes split half and laid at the bottom or on the lower courses of the brickwork or masonry.

The breadth of a substructure should be proportional to the thickness of the superstructure. Nicholson, in his architectural dictionary, says, 'If the texture of the ground is supposed to be constant, and the materials of the same specific gravity, the breadth of the foundation will be as the area of the vertical section passing through the line on which the beam is to rest; and thus, for example, suppose a wall 40 feet height 2 feet thick to have a sufficient foundation of 3 feet breadth, what should be the breadth of a wall 60 feet height 2 feet thick? By proportion it will be 40 \times \frac{3}{2} = 60 \times \frac{3}{2} = 45 \text{ feet.}

This calculation will give the breadth of the foundation of the required wall, equal to the breadth of the existing wall itself, when the height of the required wall is equal to the ratio, which is the first term (40 \times \frac{3}{2} = 80) divided by the second term (3) = 80 \times \frac{1}{3} = 26 \text{ feet. Thus a wall of 269 would have the breadth of its foundation equal to its thickness above the foundation, and less than 269 would have a thinner foundation than even the superstructure. But though the calculation in this case gives the required breadth for the thickness of the foundation, and the superstructure, it must be considered that it only calculates the true breadth of the surface that should be opposed to the ground, in order to prevent the wall from penetrating by its weight; though the rule gives all that is necessary, an account of the weight of the existing wall, the breadth of the footing should always be greater than that of the superstructure, as it will stand more firmly on its base when affected by lateral pressure, and be less liable to be carried by the blowing of heavy winds.

Concrete composed of gravel or shingle and hot lime is often used to form a solid bearing for the footings of foundations. The greatest care and judgment are required in making footings for heavy superstructures, for if the piles should be of bad quality and the ground in which they are driven of a very loose and boggy nature, the same catastrophe which occurred at the new custom-house in London may be expected to take place. In this building it was found necessary to remove the piles and loose earth and form a solid concrete foundation.

In brick foundations the footings have sets off, or projections of about an inch and sometimes more. In stone walls the footings are at least six inches in projection on each side of the wall which is to be carried on such a footing. FOUNDING, one of the mechanical arts which embraces all the operations of laying bricks, and of making and casting metals. There are various branches of the art, and some difference prevails in the minor details of the processes as in iron, brass, and bronze work; castings, forging guns and cannon, types for printing, and bell founding. The finishing operations of chasing, burning, plating, &c. are also parts of the founder's art. In this country, where metal-working is of so great importance in a commercial point of view, improvements and constantly being made in the operations of the foundry. The practice on the continent differs also in many respects from that pursued in our foundries; this but applies chiefly to details, as there is of course a general resemblance in the principles upon which the several processes are conducted.

Before entering upon the practical part of the subject a few preliminary remarks respecting the knowledge that existed of these arts in the earliest ages, may not be out of place; to show, at least, that founding is of very high antiquity. We trace it back, in the most ancient times, to the infancy of the human race, where it is recorded that Tuth Cain was skilled in working in metals. In the patriarchal ages we have also the description, with their materials and weight, of the present in earrings and bracelets that were offered.

Rebekah by the servant of Abraham with all the allusions to similar objects of luxury, which prove that considerable progress must have been made in these arts, since there were artisans at that time who could execute works of such delicacy and minuteness as to be used merely for ornament. It is the same with the arts of metallurgy were known and practised very extensively by the early Israelites; and we have the names of two Hebrew artists who were so celebrated for their great skill in working in the precious and noblest metals that the word was used for an instructed. (Gen. xxii. 24; Exod. xxv., &c.) There can be no doubt that the Egyptians were well acquainted with some very refined processes of founding long prior to any written historical record, and it is not improbable that those who made the works for the Temple, he gained the assistance of a Tyre, who was running to work all works in brass and brass, we are told, and wool and worsted. (1 Kings, vii.) Homer also bears evidence to the well-known ability of this people in an epitome of the building of the Trojan Horse, which was well-conducted. The art of metal-working was employed by the Greeks, Etruscans, and Romans, and the excellence to which it was occasionally carried in the fine arts are too well known to need further observation in this place: a general history of it, as a branch of art, has already been given the in the history of sculpture, which also contains some notices from the ancient writers on the different metals adopted for the making of horns, hammer-work, hammer-work in plates, and in casting, as well as on the varieties and composition of metals. In the history of founding there has been much confusion in the points of ancient founding our information is very limited, the writers of antiquity having confounded themselves, generally, to a description of finish productions, and leaving little or nothing by which we can judge of the mode of working.
advance of the iron and other metal works of this country may be dated.

We have stated the chief reason for having recourse to the coal-mines for fuel to have been the apprehension that the wane of wood fuel would fail; but for the well-grounded fear wood or charcoal would always be preferred for many of the operations of metallurgy, from its being less objectionable, as regards its chemical composition, than coal. The iron that is smelted in Sweden by wood fuel is considered as more necessary to be sought after; and the smelters in this country find it necessary to charge the pit and sea-coal which they use, in order to adapt it to the purposes required. There are various ways of making this charred coal, which is called coke or coal.

These are all the states in which an iron dust in a kiln heated with large coal: the small coal then runs together and forms a large mass which, when it is completely red, is pulled or drawn out in lumps with iron rakes and kild on the ground. It is spongy and porous in its lower part, but its top is coarser and of greater resistance, as it is only deprived by this process of its volatile parts, and nothing remains but the carbon and earthly impurities. Sometimes coke is made in the open air; ashes being thrown upon the mass which, after it has lost its volatile part, is then heated in an iron oven; but the object of this covering is to prevent the access of air. Some years ago a plan was discovered and carried into effect for saving the volatile products of the coal which were lost by the processes hitherto adopted for making coke. By burning the coal in a large circular pit, the coal is heated at the bottom, and conducting the smoke to a capacious close tunnel, the hitumen is condensed in the form of tar.

This improvement upon the former method was discovered by Lord Dundas, who proposed a more economical system;and the chambers of the methods employed for reducing the ores of different metals. Many of those details would be useless, except to the operative smelter; while others can only be known to those experienced in the several processes, and are perhaps some that are incomprehensible by those who are not familiar with their usages. To the first of these classes is placed the method employed for reducing the ores of different metals. The second class is comprised of those which are the same, but of a different nature. The first class includes, in its variety, the modifications of the chemical sciences; the second class consists of the chemical processes.

Iron is obtained from a very abundant ore in this country, viz., the common ironstone of our coal-measuries. It is found in extensive formations in small and ironstone, or to reduce the ore to a metallic state it is necessary to add a certain quantity of lime, which acts as a flux; and it is worthy of remark that, while the ore itself from which the metal is produced, and the coal for melting it, are found together, the limestone by which its reduction is assisted, seems to have been separated from the carboniferous strata, and sometimes, as in the great coal basin of South Wales, a bed of millstone grit capable of enduring the fire, and used in constructing the furnaces, is also found in connexion or alternating with the iron ore and limestone. It is easy to conceive that these strata are of beds of iron ore in the strata of the slaty clay that alternate with beds of coal, has rendered the adjacent districts remarkable as the site of most important iron foundries; and these localities usually present a further practical advantage to the manufacturer of iron and coke. The iron is produced in a blast furnace of limestone that supplies the third material required as a flux to reduce this ore to a metallic state. (Buckland, Bridgewater Treatise, Geological and Mineral, vol. i.) The occurrence of this most useful of metals from and near the coal-measuries, bears, is immediate connexion with the fuel requisite for its reduction, and the limestone that facilitates that reduction, is an instance of arrangement so happily adapted to the purposes of human industry, that it can hardly be conceived that the improvement in the blast furnace could have been invented, had the materials been wanting. In fact, the coincidence of the materials required for reducing the iron and the materials that facilitate that process, in the blast furnace, is a notable instance of the correctness of the remark of Bacon, that a book is a construction of stone, and a stone is a construction of books, that the advantage of a book is visible in the advantage of a stone.

The reduction of the iron is one of the most important parts of the business of a foundry, but it is not the most difficult. The ore, which is usually of the size of a pea, is sufficiently roasted to oxidise the iron which it contains, it is melted. The melted metal is after a time suffered to flow into a pit filled with water, by which it becomes granulated. The greater part of the metal after heating, and what is left by the technical process of its skimming (or scoria) is taken off, and it is again allowed to run off into water. After other nearly similar processes it is cast in sand, when it becomes solid, and in this state is called blistered copper. It is now fit for what is termed the refining, and undergoes an operation called refining or toughening. This is considered to be an operation of delicacy, and requires great skill and care in the workmen. It is conducted in a furnace similar to the melting furnace, and the object is to thoroughly purify the metal and add more carbon to it by adding charcoal to the copper while it is in fusion, and stirring it occasionally till it is judged to be pure. When this is united with copper, it forms the compound called bronze; and it is remarked that the same molten metal is always greater the proportion of carbon deduced from the computation of the quantities and specific gravities of the component parts taken singly. The use to which this valuable composition is applied in the fabrics of cannon and ordnance, is well known. The same is true of copper, which is also generally united with zinc, copper forms the compound called brass. It is not easy to effect this union by simple fusion; it is therefore usually done by cementation, when the granulated copper is combined with the vapour of zinc.
combined with sulphur. There are, however, other ores of lead. The calena, being freed by hammering it and by the hand, from whatever impurities can be separated from it by these means, is broken up into small pieces, and after a roasting process is played in lime on a hearth, but only sufficiently heated to drive off certain ingredients without melting the lead itself. The roasting being finished, charcoal is added till the reduction is completed. The lead, after the slag has been removed from it, is suffered to run out of the pit, and the first skin being cooled and the mould ladled out into moulds and left to cool. There are various methods adopted in different places and under different circumstances for procuring metals from their ores.

The furnaces that are used in founding are chiefly of two kinds, the Jos. For the purpose of furnaces, yet they are distinguished as air or foundry furnaces and blast furnaces. The first acts by a draught through a chimney. In the other the air is forced into the body of the furnace by means of bellows. The forms and relative proportion of the different parts of the furnace, and particularly the size, elevation, and direction of the chimney, and the dimensions and space of the flues when these are required, are of great importance; the volume and intensity of heat and every other operation is usually measured by the knowledge and science displayed in adapting the parts to each other. The blast furnace was most probably known at a very early period. The old mode of working the bellows was by hand, or by cattle, or more usually by water. For the purposes, as well as for the use of the power of steam, and the certainty and regularity of its action, has rendered its employment almost universal, at least in works of any extent. There is another variety of furnace to which allusion has been made in describing certain processes by which a cupola furnace is used, and some of them a reverberatory furnace. It is used for many operations in founding, and is often preferred for particular application of heat different from those before mentioned. In this furnace the air and fuel, or the metal and fuel, if it is used for casting, do not come into contact, but the flame only shall pass over the material to be acted on. The reverberatory furnace is generally employed for smelting lead and copper ores and for refining some of the finer metals.

Founding is practised either in melting or casting any kind of metal; the casting is the more frequent in the usages of which the metal is preserved of a determined thickness or substance, or in large castings. Before any object can be cast in metal it is necessary that a model of it be prepared. The models must be made of wax, or of some material as wax, or of some other material as clay. Upon those models moulds must be made; these are commonly composed of plaster of Paris mixed with brick dust, sometimes sand, or steel shavings. When the models are made, the work of brass work a yellowish sharp sand is preferred, which is prepared by mixing it with water and then rolling it on a flat board till it is well kneaded and fit for use. This process is called, in technical language, teething. If the object is cylindrical, more or less, it is more conveniently wrought in another mould, or sand, and this is called the core; and the core and mould are cast together, and the edges or seams carefully cleaned. This double casting is an easy and cheap mode of execution, and only requires care to be successful. For the smaller class of works, instead of melting and running the metal at once from a large furnace, earthen crucibles are used, into which the metal is thrown in small pieces; the crucible is placed in a strong heat in a close stove, and as the metal is melted and sinks more is added till the vessel is full. It is then brought to the required iron to be poured into a mould, and the metal is poured into the moulds, in which channels or ducts for receiving it have been previously made. There is one great advantage in using crucibles, viz., that the metal may be varied to any part of the foundry, whereas in general it is essential to a core and mould and the furnace close together. It is obvious however that melting metal in crucibles can only be practised where the casting is on a comparatively small scale.

In the process of cooling, mention has been made of one in which a core is used, and which may require some explanation. The core, as its name denotes, it a part or portion situated within the body of the cast; and its purpose in founding is to form a centre to the work by which it is sustained, and to keep any part of the metal may be separated. In coring, the mould must first be made complete;
great care and skill to insure its being true, is effected by a machine adapted to the purpose. Wood fuel is used for this branch of founding, but the furnace is a reverberatory, and the flame, and not the fuel, comes in contact with the metal. The proportion of brass ordnance is 90 copper and 10 tin in 100 parts.

In ordnance-casting in France the proportion of copper is greater, being stated at 100 copper to 11 of tin, which is about the composition of the bronze of which metal is formed, and providing a very brittle metal, covered with scales of oxide, is exposed when cast. This composition for the 'espéori,' or foundlings, was afterwards enlarged and endorsed by subsequent popes, and the institution was adopted by degrees in other cities. It was thought that these mothers were taking advantage of the illegitimate children in safety without being subject to any inquiry or exposure, the frequent recurrence of the crime of child-murder would be prevented. For this purpose a turning box was fixed in an opening of the wall in a retired part of the castle, and the mother, after the infant had been placed in the box, went to bed and fell asleep. The mother in the night and a bell ringing at the same time, the watch inside turned the box and took the infant, which from that moment was placed under the protection of the institution, was nursed and educated, and afterwards was presented to a master or a mistress, who were in hopes of being able to acknowledge their child at some future time, placed a mark or note with it, by which it was afterwards known when they came to claim it, and it was then restored to them on their defraying the expense incurred for its care.

In France the philanthropist Vincent de Paul, founder of the Society of the Missions in the first half of the seventeenth century, exerted himself to found an asylum for illegitimate infants, which were often thus frequently left to perish in the streets of Paris. It was at first supported by subscriptions, but afterwards was made a national establishment — Hôpital des Enfants trouvés. Similar institutions were founded in other great French cities. In 1831 there were 7,411 illegitimate children born in France about one-thirteen of the whole number of births — but in Paris the proportion is much greater, being one illegitimate child in every three births. Of the whole number of illegitimate children, about 58 out of every 100 are shan-
doned and taken from the sidewalk by the foundlings, or in the streets of Paris, or in the prisons, or in the hospitals, or in the poor-houses, or in the poor-houses. In the society of the poor, which is a charitable institution, it is impossible to say how frequently the children are taken from the poor-house or from the charitable institutions, and they are only taken from the poor-house or from the charitable institutions when they do not agree to be more necessary, or at least less objectionable, than in those where the mothers of illegitimate children, if unable to support them, have, like other destitute persons, the re-
sources of the public poor-house. It must also be observed that mothers of illegitimate children often neglect their unfortunate offspring, and are ill calculated by their habits to rear them up so as to make of them useful and honest members of society.

FOUNTAINS are jets of water, flowing either naturally out of the earth, or from structures formed by art. Artificial fountains consist of water flowing from statues, vases, or architectural buildings combined with sculptured figures and other ornamental decorations.

Many antient and modern fountains are decorated with fountains. Paulinus informs us that Corinth was adorned with several fountains, and he mentions one in particular which stood near the statue of Diana, representing Pegasus, with the water flowing through his feet (ii. 5). He describes another as consisting of a bronze basin, with a column of stone from the mouth of which the water issued (ii. 5). Frontinus, who lived in the reigns of Nerva and Trajan, was superintendent of the fountains at Rome, and wrote a work, De Aqueductibus Urbis Romae Commentarius, in which he treats, among other things, of the distribution of the
waters of fountains. The public fountains of Pompeii, some of which are almost perfect, evince the knowledge which the ancients possessed of the property of water to rise to its level, and their practical application of the principle.

Not only were the streets, but even the private houses of the Pompeians, decorated with fountains, and it appears that the aqueducts were introduced with that law by which fluids may be made to ascend in a vertical jet to a height proportionate to the pressure which acts upon them.

One of the domestic fountains of the Pompeians is encrusted with coloured glass and shells. The fountain of water flowed from a large mask set on steps, placed within a large niche.

At Rome, the proper distribution of the rivers which flowed through her aqueducts was a matter of great importance, entrusted to the care of an officer of very high rank. It appears from Frontinus, who filled that office under the Emperor Nerva, that the letting out of the public waters to private persons was a source of revenue; and from his numerous complaints of fraud, and directions to prevent it, we learn something of the manner of distribution. The aqueducts were each charged with a certain number of pipes of supply; and no new pipe could be inserted without a special application to the emperor. Permission being obtained, the overseer assigned to the applicant a calix, as it was called, of the assigned dimensions. This was a brass measure (modulus) fixed in the castellum or reservoir, the diameter of which regulated of course the quantity of water which passed through it. It was ordered to be made of brass, that it might not easily bend, and that there might be less room for fraud, either on the public or the individual, by enlarging or diminishing the prescribed aperture. Beyond the calix the pipe was private property; but more effectually to prevent fraud, it was enacted, that for fifty feet from the calix the pipe and it were to be of the same dimensions; and to prevent the breaking up of the public pipes, it was expressly provided that every person should draw his water direct from one of the castellae, or reservoirs in which the aqueducts terminated. The right to a supply of water was strictly personal, not attached to houses, so that the supply was cut off at every change of ownership. The waters which had once been granted were sold by the superintendents, as they fell in, to the highest bidders.

Those whose means or interest were insufficient to obtain a private supply were obliged to resort to the public fountains. (Pompeii, vol. ii. pp. 73, 74.)

The number of leaden pipes found in Pompeii leads us to conclude that they were universally employed in fitting up the fountains of that city. Some fountains flowed through bronze figures, of which several are preserved in the Museum at Naples.

Some of the cities of Italy and the East are adorned with fountains, which are less agreeable to the eye than useful to the inhabitants. Of all places in the world none appear to be so abundantly furnished with this agreeable convenience as modern Rome, though this profusion is most probably only a tithe of the luxury with which the ancient city was supplied. Many of the fountains of Rome are highly decorated, of great magnitude, and very varied in shape. Fountains were set up of the water supplied from the existing aqueducts. The fountains of Tresi, and the Pauline fountain at San Pietro in Montorio, are immense piles of architecture, the former highly decorated with sculpture. In Italy, almost every species of design with the exception of the column in form has been adopted by their ingenious artists in the construction of fountains.

The city of Paris is well supplied with fountains, many of which are elegantly designed. The fountains of Versailles and St. Cloud in France, and the fountains at Wil- 

The library in the castle near Cassel, are the largest in the world; although well supplied with water, is almost destitute of fountains.

FOURCROY, ANTOINE-FRANCOIS DE, an eminent French chemist, councillor of state, commander of the Legion of Honour, member of the Academies of the sciences of Paris, and professor of chemistry at the Museum of Natural History, at the Faculty of Medicine of Paris, and at the Polytechnic School, was born at Paris, on the 16th of June, 1735, and was the son of Jean-Michel de Fourcroy and Jeanne Laugier.

His family had long resided in the capital, and several of his ancestors had distinguished themselves at the bar. Antoine-François de Fourcroy sprung from a branch of the family that had gradually sunk into poverty, and although the subject of the present article, grew up in the midst of it. When seven years old, he lost his mother, and his sister preserved him with difficulty till he went to college; and in consequence of the ill treatment of a master he left it at fourteen years of age, somewhat less informed than when he went to it.

He entertained various projects for obtaining a livelihood. While uncertain what plan to follow, the advice of a friend, who was a celebrated anatomist, and who, on the subject of the present article, grew up in the midst of it. When seven years old, he lost his mother, and his sister preserved him with difficulty till he went to college; and in consequence of the ill treatment of a master he left it at fourteen years of age, somewhat less informed than when he went to it.

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... the Polytéchnic School, at which, as already stated, he was professor of chemistry; and both as a member of the Convention and of the Council of Antients, he was concerned in the establishment of the Institute and the museum of natural history.

The great exertions made by M. de Fourcroy, and the prodigious activity which he displayed in the numerous situations which he filled, gradually undermined his constitution; he was sensitive of his approaching death, and announced it to his friends as an event which would speedily take place. On the 16th of December, 1809, after signing some dispatches, he suddenly exclaimed—"Je suis mort;" and fell lifeless on the ground.

M. de Fourcroy was twice married, by his first wife he left a son, a soldier, who inherits his title, and a daughter, Madame Faucaud.

In his 'History of Chemistry,' Dr. Thomson thus concludes his notice of the works of Fourcroy:—"Notwithstanding the vast quantity of papers in which he published, it will be admitted, without disagree, that the prodigious reputation which he enjoyed during his lifetime was more owing to his eloquence than to his eminence as a chemist; though even as a chemist he was far above mediocrity. He must have possessed an uncommon facility of writing. Five successive editions of his 'System of Chemistry' appeared, each of them gradually increasing in size and value: the first being in two volumes and the last in ten. This last edition he wrote in sixteen months: it contains much valuable information and numerous contributions to the general diffusion of chemical knowledge. Its style is perhaps too diffuse, and the spirit of generalizing from particular and often ill authenticated facts, is carried to a ridiculous length. Perhaps the best of all his productions is his 'Philosophy of Chemistry,' which he commenced at his own request, and the neatness of its arrangement.

Besides these works and the periodical publication entitled 'Le Médecin éclairé,' of which he was the editor, there are above one hundred of his papers, of which sixty are contained in the memoirs of the academy and of the institute; in the 'Annales de Chimie,' or the 'Annales de Musée d'Histoire Naturelle,' of which last work he was the original projector. Most of these papers contained analyses, both animal, vegetable, and mineral, of very considerable value. In most of them the name of Vauquelin is associated with his own as the author, and the general opinion is that the experiments were all made by Vauquelin, but that the papers themselves were got up by Fourcroy.

It would serve little purpose to go over this long list of papers. Though they contributed essentially to the progress of chemistry, yet they exhibit but few of those striking discoveries which at once alter the face of the science, and are of a general utility on every thing around them. We shall merely notice a few of what we consider his best papers.

1. He ascertained that the most common binary calculi are composed of a substance similar to spermaceti. During the removal of the dead bodies from the burnt mound of the Incendiaries at Paris, he discovered that the bodies were converted into a fatty matter, which he called adipocere. It has since been distinguished by the name of cholestrine, and has been shown to possess properties different from those of animal and vegetable fats.

2. It is to him that we are indebted for the first knowledge of the fact, that the salts of magnesia and ammonia have the property of uniting together and forming double salts.

3. His dissertation on the sulphate of mercury contains some good observations. The same remark applies to his paper on the action of ammonia on the sulphate, nitrate, and muriate of mercury. He first described the double salts which are formed.

4. The analyses of urine would have been invaluable had not almost all the facts contained in it been anticipated by a paper of Dr. Wollaston published in the 'Philosophical Transactions.' It is to him that we are indebted for almost all the additions to our knowledge of calciuria since the publication of the original paper on the subject.

5. We may mention the process of Fourcroy and Vauquelin for obtaining pure barytes, by exposing nitrate of barytes to a red heat, as a good one. They discovered the existence of phosphates of magnesia in the bones, of phosphorus in the brain, and in the milks of fishes, and a considerable quantity of saccharine matter in the bulb of the common onion, which, by undergoing a kind of spontaneous fermentation, was converted into alcohol.

In these and most other similar discoveries which we think it unnecessary to notice, we do not know what fell to the share of Fourcroy and what to Vauquelin; but there is one merit at least to which Fourcroy is certainly entitled, and it is no small one: he first showed clearly that the facts he had brought forward had been improved to him ever after a most steady and indefatigable friend. This is bestowing so small a pænegeic on his character; for it would have been impossible to have retained such a friend through all the horrors of the French revolution, if his own principles had not been such as to merit so steady an attachment.

In concluding, we may remark that this circumstance, coupled with the well-known fact of his having saved the lives of some men of merit, and among others, of Darcet, and to Egypt. Napoleon's instructions to the savants were various; he was secretary of the Institute which was formed at Cairo, he superintended the commission which was employed in collecting materials for the great work on Egypt, and was employed in judicial and diplomatic capacities. At his request from Egypt, he was appointed by the first council of the department of Isère, which place he continued to fill till 1815, his situation having been preserved to him at the fall of Napoleon in 1814, by the high estimation in which he was held, and the gratitude of the monarch whom he had served. When Napoleon, in 1815, passed through Grenoble (a town of Fourier's prefecture), Fourier, who had hesitated much, issued a moderate Bourbonist proclamation, and left the town by one gate as Napoleon entered. Napoleon, however, came to the town at this stage, and causing Fourier to be brought into his presence, reminded him in strong terms of former benefits, and telling him that, after the proclamation, he could not remain at Grenoble, appointed him prefect of the department of the Rhône. Fourier, however, could not remain in this capacity, either by the matter, or subduced by the manner, of Napoleon's address to him, and went quietly to his new post. He resigned it however on the 1st of May, in consequence of his determination not to execute the orders of Carnot, which required him to make numerous arrests among the Bours.
bonites; and he was in Paris when the news of the battle of Waterloo arrived. Here he remained for some time, entirely neglected, and with very moderate funds, until his former pupil, M. de Chabrol, gave him the superintendence of a bureau de statistique. In 1816 he was chosen a member of the Institute, but Louis XVIII would not allow him to take the oath, and he was only a year after that this king could be induced to allow it. On the death of Delambre he was elected secretary of the Academy, and on that of Laplace president of the council of the Polytechnic School. Fourier died at Paris in Mar. 1830.

The character of Fourier was in every point of view respectable. His appearance and manners were decidedly good, and his address, united with the respect which he created, enabled him to manage the prejudices and passions of others, a remarkable feat, of which M. Gounod has given several instances. He knew how, says the last-named gentleman, 'prendre chom par o't il e't prenait,' and his own explanation of this faculty was 'je prens l'is dans son sens, au lieu de le prendre a rebours.' The influence of his conversation professed in one case at least abundantly remarkable: it was he who first gave a taste for Egyptian antiquities to the Chalmounians.

The writings of Fourier consist of papers in the Memoirs of the Academy of Sciences, the 'Annalen de Physique,' and the 'Bulletins des Sciences, Paris.' In addition to these, two separate works, namely, the 'Théorie de la Chaleur,' Paris, 1822, and the 'Analyse des Équations déterminées,' Paris, 1831. The last work is posthumous, and was completed under the inspection of M. Navier.

In the former works, the problem which is the deduction of the mathematical laws of the propagation of heat through solids, Fourier extended the solution of partial differential equations, gave some remarkable views on the solution of equations with an infinite number of terms, and proposed a definite integral containing its general value (which is called 'Fourier's Theorem'). This work is full of interesting detail, and is one of the highest productions of analysis in our time.

The latter of the two works contains an extension of Descartes' well known rule of signs, by means of which the number of the real roots of an equation may be determined. Considered with respect to results merely, the method of Fourier may perhaps be considered as a partner of the remarkable theorem of M. Sturm; but there is nevertheless much in the course marked out by Fourier, which it would be worth while to examine. The work also contains a method of solving equations by determination of the successive roots, at least so far as it is not proposed by Mr. Horner and others. The preface of M. Navier contains attestations as to the time at which the several parts of the work were written, which it will be worth the while of those to consult, who think that all which has been done by Fourier has been done by himself alone. The work is long before publication.

The treatise of Fourier, published by M. Navier, is only the first part of the work; the remainder has not yet appeared, to our knowledge. A full account of its principal points will be found in Mr. Peacock's report on Analysis to the British Association.

FOURMONT, ETIENNE, born at Horbelay, near Paris, in 1663, was the son of a surgeon: he studied in several colleges at Paris, and showed an early and extraordinary facility for learning languages. He made himself master of Greek, Hebrew, Sanskrit, Latin, and Arabic, and was appointed professor of the last-mentioned language in the College Royal of Paris. In 1715 he was made a member of the Academy of Inscriptions and Belles Lettres, and afterwards of the royal societies of London and Berlin. A young Chinese named Hon-jy having been brought to Paris by the missionaries, Fourier was appointed to assist and direct him in the compilation of a Chinese grammar and dictionary. After a few years Hon-jy died, and left to Fourier only very scanty materials for the intended work. Fourier was appointed envoy to the Great Assembly of 1750, and during the labour of several years he published his 'Réflexions sur l'origine de l'histoire de la Chine,' translated into French, and afterwards into English, by T. Carlyle, 1776. His 'Meditations Sinicae,' 1737, which contain a kind of introduction to the Chinese grammar, five years later he brought forth the grammar itself, which had cost him twenty years of study. *Linguae Sinarum Mandarinae Grammatica duplex, Latina et eja Characteribus Sinensis,* fol., 1742. Fourier availed himself of the suggestions of several Jesuits, and he is said to have borrowed from Father Varo's 'Aste de la Lengua Mandarina,' printed at Canton in 1708, which was little known in Europe. He also compiled a catalogue of the Chinese MSS. in the king's library at Paris. Peter the Great having forwarded to the Academy of Inscriptions some fragments of a Tibetan MS. found by the Russian afterwards was sold to raffle it, and his version is given in Boyer's 'Museum Sinicum.' His 'Réflexions sur l'origine, l'histoire, et la succession des anciens peuples de Chine,' 1741, and 'Réflexions sur l'histoire de la Chine,' 1750, were published after his death in 2 vols. 8to, Paris, 1748, with a biographical notice of the author. He wrote numerous other works, dissertations, memoirs, some of which appeared in the 'Mémoirs de l'Académie,' others were published separately, and many he lost in MS. He published himself a catalogue of the MSS. in the king's library at Paris, of which about 120, but many of them were mere unfinished sketched. Fourier was not only a mathematician, but a very remarkable man of learning; he assisted his brother in his philological labours, was made professor of Syriac in the College Royal in 1729, and he gave also from his chair lectures on the Egyptian languages. In 1724 he being sent by the French government to Greece to purchase MSS. and copy inscriptions, he gathered a rich harvest of both. He boasted of having copied more than 1000 inscriptions, chiefly in Attica and the Peloponnesus, which had escaped the researches of Spon and other antiquaries. His work is very suspicious, for having defaced or destroyed the remains of antiquity of several cities of Greece, and among others those of the temple of Jupiter at Amyclae, a feast as unmanly as it is false, or at least absurdly exaggerated. (Delaunay 'Fourier through Greece,' vol. ii. ch. 11.) He died in 1746, having published only some detached papers in the 'Mémoires de l'Académie des Inscriptions,' of which he was a member. His nephew, Claude Louis Fourier, who had accompanied him to Greece, returned to France in 1748, and having been sent to Egypt. On his return to France, he published a 'Description historique et géographique des Plaines d'Héliopolis et de Memphis, 12mo, 1753. It is a sensible, unpretending little work, and gives a satisfactory account of the condition of Egypt in the year 1750.

FOURNIER. [Creeper, Vol. viii. p. 149.]

FOURTH, an interval in music, and to be enumerated among the discords; though it seems to have puzzled many writers on music, some of whom are much inclined to think it pure second. [Cf. also 'Tintarn,' from being composed of three whole notes. The first (c, e, g) is composed of a whole note and two semitones; the second (c, e, g) of two whole notes and a semitone; and the third (c, e, c, g) of three whole tones. Example:—

FOVOLIA, MEDUSA.

FOX, a name often given to a bird of prey. FOX, Fulper, Brison, the generic name for a species of
that subdivision of the great genus Canis which has the pupils of the eyes elliptical or almost linear by day, though they become round and opaque at the hours of darkness.

Genus Vulpes. Although the dental formula and general osteological character of the Foxes agree with that of the true Dogs, the lengthened and sharp-pointed muzzle, the round head, the erect and triangular ears, the form of the pupil, the long body, short limbs and elongated, thick, and bushy brush, make them a separate from the former of the latter, at least sub-germically.

EUROPEAN FOXXES.
The Common Fox, Vulpes of Ray, Canis vulpes, and Canis aloupe (the latter the variety, if variety it may be called, with the tip of the tail black) of Linnaus, Vulpes vulgaris of Brisson, Volpe of the Italians, Raposa of the Spanish, Raposa of the Portuguese, Fuchs of the Germans, Fox of the Dutch, Of of the Swedes, Ren of the Danes, Tod of the Scotch, Lièvogu, fam. Lièvogues of the Welsh, is too well known to require description. The time of gestation may be taken at from sixty to sixty-five days, and the birth of the young takes place in April. In a year and a half, and after they have been moved to live thirteen or fourteen years; but as this can only have been ascertained, observes Mr. Bell, of individuals in confinement, it is very probable that, in a state of nature, it considerably exceeds that period. Of its cunning much has been said and that of it is a fact which will find some interesting remarks on the habits and economy of the common fox by Dr. Weissen in the number of London's Magazine, (N. S.) for October, 1837.

Geographical distribution.—The Common Fox inhabits, according to Cuvier, Asia, and Africa. Cuvier mentions it as reaching from Sweden to Egypt, both inclusive. Mr. Strickland notes it as occurring near Smyrna. The fox named Melanogaster by the Prince of Musignano in his Fauna Italica is probably a variety only. The strong smell proceeding from the anal glands and urine of the common fox is very offensive.

AMERICAN FOXXES.
The American Fox, Vulpes fulva, which is, according to Dr. Richardson, very plentiful in the wooded districts of the far countries, about eight thousand (skins) being annually imported from England from thence, bears a strong resemblance to the common European fox, and, until De Beaucours pointed out its peculiarities, was considered identical with it. Thus it is the European Fox of Pennant. Dr. Richardson observes that the American or Red Fox does not possess the wind of its English congener, its strength being exhausted by the first short burst, though it is still a very fleet, and will run a good reader's yards with great swiftness, and is soon overtaken by a wolf or a mounted huntsman. He gives the following synonyms:—European Fox of Pennant; Red or Large Fox of Hutchins; Large Red Fox of the plains of Lewis and Clark; Red Fox of the Hudson's Bay Company's lists; Beloduschi of the Russians; to be the Red Fox. He also considers the Black or Silver Fox (R. Naur or Hayuga of Sagard-Theodat) European Fox, var. a. Black Fox of Pennant; Renard Noir or Argenti of Geoffroy; Grizzle Fox of Hutchins, MSS.; Renard Argente of F. Cuvier; Grizzle Fox or Honey, of Cuvier; Black or Silver Fox of Godman; Tschernich of the Russians; to be another variety of the same. F. Cuvier doubts the identity of the American species with the Black Fox of the north of Europe.

Our limits will not permit us to give more than a few examples of the genus, and we select the Arctic Fox, Vulpes lagopus, as the American species of whose manners the most interesting accounts have been given.

Description.—The Arctic Fox is considered by Dr. Richardson, and Dr. Harlan; Arctic Fox of Pennant and Hearne; Greenland Dog of Pennant? a young individual; Itasis and Arctic Fox of Godman; Stone Fox of authors; Terricetm-airico of the Esquimaux of Melville Peninsula; Terenich of the Greenlanders; Wappeesheke-makheke of the Cree Indians, and Pisaat of the Russians.

Winter Dress.—The winter dress of the Arctic Fox, which when full grown measures about 3 feet 3 inches from the point of the nose to the tip of the tail, is entirely pure white, or white with a slight tinge of yellow, except at the tip of the tail, which in some foxes is about a hundred or two inches long. Before the eyes and on the lower jaw, the hair is short and sleek; on the forehead and posterior part of the cheeks considerably longer; and on the occiput and neck it is as high as the ears, and is intermixed with a soft wool or underfur. There is so much wool on the body that it gives fur the character of that of the Polar hare. The ears are rounded and covered with shorter hairs than the neighbouring parts: the shortest hair is on their edges, and terminates even with that on the back and front of the ear, as to give the appearance of the back having been trimmed with a pair of scissors and make the ear look thicker than it is. The long fur on the back part of the cheeks is directed backwards and contributes to give a peculiar cast to the face, a tragic and grotesque expression of the most elevated and proud countenance. The nose is reddish brown, with long pointed hairs, and the ears are long, sharp, and pointed, and are tufted with silky hairs. The vibrissae about the mouth are very strong, and in some specimens nearly white, in others dusky-brown. The hair on the body, particularly on the sides, is long: it is rather longer on the belly than on the back, but not so close and woollen, the hair on the back being denser and the tail that is of a light brownish colour, but in some specimens the ears are pure white. The shoulders and thighs long; but the foreparts of the legs are covered with short hair, and that on the hind legs is shortest and smoothest; on the hinder surface of the legs the hair is longer, and the soles of the feet are clothed with white, very soft, and thick hair, like the soles of the hare, which sufficiently distinguishes the Linnean name. Claws long, compressed, slightly arched, and of a light horn-colour. (Dr. Richardson.)

Summer Dress.—The long white hair which formed the winter clothing falls off in April or May, when the snow begins to disappear and the thicker hair which is more or less coloured.

Head and chin brown, having some fine white hairs scattered through the fur; ears, externally, coloured like the head; within white: a similar brown colour extends along the back to the tail, and the hair is now covered with a short coat, the hairs covering the feet, and in the ears, is short, and of a lighter shade. (Joseph Sainthome, Description and History of Hudson's Bay in August.)

On the approach of winter, says Dr. Richardson, the fur lengthens, the white hairs increase in number, all the hairs become white at the tips, the back, and the tail, the superficial coat is prolonged, and the white coat is then of a cream-colour, the hairs on the soles of the feet being darker.

Food.—Eggs, young birds, blubber, and carrion of any kind; but their main diet is the blue or brown-haired Arctic fox, writes Captain Lyon, 'when no snow was attainable, they would enter the bush and eat the fat and fur, and in that manner carefully keep it as to hide the meat. On moving away, satis-
find with his operation, he, of course, had drawn it after him again, and sometimes with great patience repeated his labours five or six times, until in a passion, he has been constrained to eat his food without its having been rendered furious by previous concealment. Snow is the substitute for water to these creatures, and on a large lump being given to them, they break it in pieces with their feet, and roll on it with great delight. When the snow was slightly scattered on the decks, they did not liek it up, as dogs are accustomed to do, but by repeatedly pressing with their noses to its extremity, and then drew them into the mouth with the assistance of the tongue. The same author gives the following account of the sagacity of the same dog fox.—’He was small and not perfectly white; but his tameness was so remarkable that I could not afford to lose him. He was found on deck a small hutch with a scope of chain. During the first day, finding himself much tormented by being drawn out repeatedly by his chain, he at length, whenever he retreated to his hutch, took this carefully up in his mouth, and drew it so completely after him, that no one who valued his fingers would endeavour to take hold of the end attached to the staple.’

Captain James Ross, in his Appendix to Captain Sir John Ross’s last voyage, gives the following account of the Arctic Fox (^Canis lagopus^, var. *fuscicnous*). In the outer ear, and in the several passages leading to it, we found great numbers of the two species of stenotis, several ermine, and the bones of hares, fish, and ducks in great quantities. Four of the young foxes were kept alive till the end of the following winter, and were a great amusement to our crew by their playful nature, as they soon became very tame. They never attained the pure white of the old fox, a dusty lead-colour remaining on the face and sides of the body. There is a remarkable difference in the disposition of these animals, some being easily tamed, and others remaining savage and uncontrollable, notwithstanding the kindest treatment. The females are much more vicious than the males. A dog fox that lived several months became so tame in a short time that he regularly attended our dinner-table like a dog, and was always allowed to eat large about the sixpenny cabin. A pair kept for the purpose of watching the changes of their fur, threw off their winter dress during the first week in June; the female a few days earlier than the male. Towards the end of September the brown fur of summer gradually became of a greyish hue, and by the middle of October was perfectly white; from that period it continued rapidly to increase in thickness until the end of November, when the last of the two sexes, having lived in confinement nearly two months, one at least had become perfectly white.

**Geographical Distribution.**—The highest northern latitudes throughout the winter. The young generally migrate to the southward late in the autumn and collect in vast multitudes on the shores of Hudson’s Bay: they return early the following spring along the same coast to the northward, and seldom again leave the spot they select as a breeding-place.’ (Captain James Ross.) ‘Their southern limit in North America appears to be about lat. 50°. They are numerous on the shores of Hudson’s Bay, north of Churchill, where they are found at Belcher’s Straits; by the brown variety (*fuscicnous*) is the more common in the latter quarter.’ (Dr. Richardson.) The Doctor continues thus. —’Towards the middle of winter they retire to the southward, evidently in search of food, keeping as much as possible in company, and go in regular bands to the northward in districts where the coast-line is in the direction of their march. Captain Parry relates that the Arctic foxes, which were previously numerous, began to retire from Melville Peninsula in November, and that by January few remained. Towards the centre of the continent, in lat. 60°, they are seen only in winter, and then not in numbers; they are very scarce in lat. 61°, and at Churchill, in lat. 57°, only two were seen in forty years. On the coast of Hudson’s Bay however, according to Hearne, they arrive at Churchill, in lat. 59°, about the middle of October, and afterwards receive reinforcements from the northward and their numbers almost exceed credibility. Many are captured there by the hunters, and the greater part of the survivors cross the Churchill River as soon as it is frozen over, and continue their journey along the coast to Nelson and Severn Rivers. In like manner they extend their incursions along the whole Labrador coast to the Gulf of St. Lawrence.’

**Utility to Man.**—The fur is considered to be of no value in the north, but is gathered for its edible flesh, particularly when young. Captain Franklin and his party compared the flavour of the young animal to that of the American hare. Captain Lyon thought it resembled the flesh of a kid. Captain Sir John Ross’s party that summer under the command of Dr. Richardson and young Tom Ross, killed a very young lamb. ‘The flesh,’ continues Captain James Ross, ‘of the old fox is by no means so palatable; and the water it is boiled in becomes so acid as to excite the mouth and tongue. During our late expedition they constituted one of the principal luxuries of our table, and were always reserved for holidays and great occasions. We were boiled, or more frequently, after being boiled, roasted in a pition-kettle. They were taken by us in considerable numbers, and formed a valuable article for provisions when meat was very scarce.’

**Zoologists generally agree that the Sooty Fox, or Arctic Fox (^Canis fuliginosus^), is only a variety of the same above described and figured.’**

Dr. Richardson observes that M. F. Cuvier and M. D. Mareste, who admit and describe the American red fox (*flagus*) as a distinct species, state the Common Fox of Europe to be also an inhabitant of North America. Dr. Richardson remarks that it inhabits the extreme north of Canada lying to the eastward of the Rocky Mountains, and consequently did not come under his notice in the expeditions to which he was attached; but he admittance into ‘Fama Boreali Ameirciana,’ as being most probably extinct there. Mr. Kalm remarks that he had observed two different accounts of their coming over. Mr. Barrow, and several others, were told by the Indians that these foxes had come into America soon after the arrival of the Europeans; after an extraordinary cold winter, when all the sea to the northward was frozen. Dr. Mr. Evans, and some other persons, assured Kalm that it was still known by the people that a gentleman of fortune in New England who had much inclination for the chase, brought over a great number of foxes from Europe, and let their loose on the territory in the beginning of New England’s being peopled with European inhabitants. These foxes were believed to have so multiplied that all the red foxes in the country were then the spring Kalm, who states that these foxes were very scarce at New York, but that they were entirely the same with the European sort, considers neither of these accounts satisfactory. Dr. Godman remarks that these red foxes were numerous in the middle and southern States of the Union, and were very scarce in the northern counties of the paly-wards. Dr. Richardson thinks it very probable
that an investigation into the characters of the American foxes will show that the reddish fox of the Atlantic States is a variety of the Canis cinereus, which has been mistaken for the European fox.

African Foxes.
The species are numerous, but our limits not permitting us to enter at large into a history of them, we select as an example the Canis, Canis (Vulpes) Canaan, the smallest of the South African foxes. Dr. Smith, in his Catalogue to the South African Museum, from a specimen in which our figure is taken, observes, that some few individuals are to be met with within the limits of the colony, but that the favourite residence of the species seems to be to the northward; though there it is daily becoming less and less noticed, owing to the great extension of the natives as a covering in the cold season. Many of the Bochuanas, it is stated, find their sole employment in hunting these animals with dogs or setting them. Like other foxes, it is a great enemy to birds, and the natives of the ground; and it is suspiciously watched by the ostrich in particular during the laying season. The Canaan, when he succeeds in obtaining the eggs, pushes them forcibly along the ground till they come in contact with some substance hard enough to break them, when he feasts on the contents. The natives take advantage of the watching of the ostrich for this robber to lure the bird to its destruction. Knowing that the anxious parent runs to the nest the moment a fox appears, they fasten a dog near it and hide themselves. The ostrich approaches to drive away the supposed fox, and is shot by the concealed hunter. (Catalogue of the South African Museum.)

Asiatic Foxes.
Examples of the Asiatic foxes we select the small Indian insectivorous fox (Canis Bengalensis of Shaw), which Mr. Hume notes among the mammals of Neyp, as occurring in the Tarik. It is brown above, with a longitudinal black band. The space round the eyes is white, and the tail is terminated with black.

The Fox of the Dukhan (Deccan), Kohres of the Madrattas, Canis Kohres of Sylkes, which the Colonel considers to be new to science, although it much resembles the descriptions of the Corac, is described by him (Zool. Proc., 1831) as a very pretty animal, but much smaller than the European Fox. Head short; muzzle very sharp. Eye oblique; trider nut-brown. Legs very slender. Tail trailing on the ground; very bushy. Along the back and on the forehead fawn colour, with hair having a white ring near to its tip. Back, neck, between the eyes, along the sides, and half way down the tail, reddish-grey, each hair being in a broad black line and with a reddish outside, reddish-white inside. Chin and throat dirty-white. Along the belly reddish-white. Ears externally dark-brown, and with the fur so short as to be scarcely discoverable. Edges of the eyelids black. Muzzle redder, height 22 and 224 inches; of the tail 118 to 12 inches (Sykes).

Canis Bengalensis, Hill Fox of the Europeans in the Oon, in Kunmon, and the more western and elevated parts of the mountains, described by Mr. Ogilby in the zoological part of Mr. Royle's 'Flora Himalaica,' is greatly admired for the beauty of its form and the brilliance and variety of its colours. The whole length to the origin of the tail is 2 feet 6 inches; that of the tail 1 foot 6 inches; that of the ears 4 inches; and the height is stated at about 1 foot 4 or 5 inches. The European foxes with the common European, and African foxes (C. vulpes and C. fulvescens) in the black marks on the backs of the ears, and in front of the hind and fore-legs. The coat consists of long, close, rich fur, as fine as that of any of the American varieties, and of infinitely more brilliant and variegated. Mr. Royle procured one at Mussoorie in its winter dress. Mr. Hodgson notes it as a large Fox N. S.? peculiar to the Kachru. For details we refer the reader to the interesting work above mentioned, and to the Zool. Proc. for 1836, p. 103.

Fennec.
This animal, which has given rise to much controversy, is generally placed by the French zoologists among the Foxes; but the observations of Mr. Yarrall, to whom we shall presently allude, lead him to pronounce decidedly that the Fennec appears to him to belong to the genus Canis properly so called; the osteological part of the structure closely resembling that of the dog, and the pupil of the eye being circular.

We are indebted to Colonel Dixon Denham the first good figure of the animal. In the April number of his travels there is a very luminous history and description of it, as far as the information went at the time of its publication.

The Fennec obtained by Bruce when he was consul-general at Algiers, seems to have been caught near the Cape, and is the one at the Natural History Museum, R.N., who presented it to Mr. Brandow, the Swedish consul. His favourite food consisted of dates or any sweet fruit; but he was also very fond of eggs. He could eat bread when hungry, more especially if it was served up by honey or sugar. The sight of a bird aroused him to eagerness as long as it was present; and a cat was his aversion. He would endeavour to bite from the latter; but never showed a disposition to eat or defend himself. The Fennec was caught in the town by day, but as night came it became restless to excess. Bruce never heard it utter any sound. He says that the animal is described in many Arabian books under the name of El Fennec. He adds that it is known all over Africa. He has conceived that the word is derived from the Greek, πνέων, a palm of date-tree, adding that the animal builds his nest on trees, and does not burrow in the earth.

Description of Bruce's Fennec.—Length about 10 inches; tail 5 inches, near an inch at the tip being black. From the point of the fore-shoulder to that of the fore-toe 2 inches; from the occiput to the point of nose 24 inches. Ears greet, 3 inches in length, 1 inch in breadth, with a circle or fold at the bottom externally; the interior membranes were thickly covered with soft white hair, but the middle part was bare, and of a pink or rose-colour; interior cavity very large. Pupil of the eye large and black; iris deep blue. Whiskers strong and thick. Naso sharp at the tip, black and pollicular. Jaw short and powerful, with cutting teeth in each jaw six; those in the under jaw smallest; two long, large, and exceedingly pointed canines in each jaw; molars four on each side shore and below. Legs small; feet very broad, with four toes, armed with crooked, black, sharp claws. Tail short, flat, with more crooked and sharp than those behind. Colour of the body dirty-white. Bordering on cream-colour; the hair on the belly rather whiter, softer, and longer than that of the rest of the body.

Lacépède is said to have given the animal the generic name of Fenncus. Illiger describes it under the appellation of Megalotis, placing it in his order Falcata, immediately before Canis and Hyana, and gives the number of molars in each jaw six, but without quoting any authority.
Sporran makes the Fennec the species he has called Zerda, and a little animal found in the sands of Carthage, near the Cape of Good Hope; after him, Pennant and Gmelin named the animal Canis Cerdo. Brander considered it as a kind of fox, but Blumenbach inclined to place it among the Viverras. Geoffroy St. Hilaire, holding Bruce's description to be inaccurate and imperfect, supposes the Fennec to be a Galago; but Desmarest, like Illiger, gives it a position among the Doges in the order Carnivortes. Cuvier, in his 'Règne Animal,' speaks of the animal doubtfully and loosely.

Mr. Griffith figures two animals, both, according to him, belonging to this genus. One came from the Cape of Good Hope and is in the Paris Museum, where it is called Canis Megalotis; and Desmarest has described it in his Mammalogie. (Encyc. Meth. Supp., p. 338.) This is called by Col. Hamilton Smith, who made the drawings of both, 'Megalops Lalatae,' to distinguish it from Bruce's Fennec. The other is from the Interior of Nubis, and is in the Frankfort Museum. The first of these is as large as the common fox, and differs altogether from Bruce's Fennec. Col. Smith considers the second to be Bruce's animal.

Mr. Smith, from the ground (4. Appendix, 1825) that M. Temminck and himself saw the Frankfort animal which had been drawn by Col. Smith, and recognized it as the true Zerda; and M. Temminck, in the prospectus of his 'Monographies de Mammalogie,' announced it as belonging to the genus Canis. Leucart, in a letter to him, and with whom he suppressed the generic terms Megalotis and Fennecus, because, in his opinion, the animal very obviously belongs to the genus Canis, and to the subgenus Vulpes, the number of teeth and their form being precisely the same as those of the true Zerda. But to which the name bears a great resemblance in regard to the number of the toes, and form of the tail, and the principal difference lying in the great length of the ears and the general smallness of the animal.

**Description of Major Denham's Fennec** (Fennecus Cerdo).

**Dental formula:** Incisors 6; Canines 1; Molars 6.

- **Length of head from extremity of nose to occiput (inches):** 3.6
- **Breath between eyes:** 0.6
- **Length of ears:** 3.6
- **Widest breadth of cranium:** 2
- **Length from occiput to insertion of tail:** 9.3
- **Height below beak, measured to the top of back, above shoulder:** 0.9
- **Height below beak, measured to top of back, above loin:** 0.7
- **Breadth of extremity of nose:** 0.6
- **Length of middle claws of fore-foot:** 0.7
- **External claws:** 0.6
- **Middle and external claws of hind-foot:** 0.6

General colour white, slightly inclining to yellow, and very much spotted. Skin from the occiput to the insertion of the tail light rufous-brown, delicately pencilled with fine brown lines from thinly scattered hairs tipped with black; the exterior of the thighs lighter rufous-brown; chin, throat, belly, and interior of thighs and legs, white or cream-colour. Nails pointed and black at the Fennec bears more the most quadrupeds. The skull, generally, so closely resembled that of the dog as to make a particular description unecessary: there was also one other point of similarity—the pupil of the eye was circular.

Mr. Vigors ascertainment from the same skull that the teeth of the Fennec correspond much more precisely with those of the fox. M. Ruppel has figured and described in his Atlas *Zur Rete im nördlichen Afrika*, together with six other species of Canis, the Fennec, Canis Zerda, Zimm. These specimens were transmitted to Frankfort, all perfectly alike in markings, and differing little from each other in size. They were found in the neighbourhood of Amelkand, and in the desert of Korti, where they inhabit holes made by themselves. They do not nestle on trees as Bruce ascertained.

**Dr. Buckland,** in his 'Bridgewater Treatise,' figures a fox as recent and fossil among the mammalia of the first period of the Tertiary series (Eocene of Liyle), and mentions the fox in his list of vertebral animals found in the gypsum of the Basin of Paris. The most complete fossil specimen is that which was found in the quarries of *Erpergen*, near Constance, overlaid by upwards of twenty feet of marl, limestone, and building stone, brought to England by R. J. Murchison, Esq., then president of the Geological Society of London, who describes the deposit in the *Geological
Transactions' (vol. iii., 2nd Series), and gives excellent figures of the fox, which is accurately described in the same paper by Dr. Mantell. Mr. Murchison's observations lead him to think that the Oenina formation is exclusively of ancient lacustrine origin, but that it is entirely posterior to the creation of the earth, being a deposit of crustaceans, conchifera, mollusks, and plants, a leaf of one of the latter being scarcely distinguishable from the Acer pterilorum of Nepal, occur in the Oenina heds. The other mammal found there were Rodents, see Cuv., Oesem. Foss., to which the present species belongs. The British Museum has been subsequently figured and named by Mr. König, Anoena (Oenina), and Professor Sedgwick brought one from the quarries which M. Laurillard referred to the genus Lagnomy. It is worthy of notice that lemmings are said to have been observed by Dr. Murchison in the country of the Oenina, in the parish of terbury. Southam J. Ross found in the burrow of one great numbers of the two species of lemming, and the bones of hare, fish, and ducks, in great quantities as well as several ermine, (p. 392). Mr. Murchison's fox is stated to be scarcely distinguishable from the common fox. One slab of this fox fossil is in Mr. Murchison's possession: the other half he liberally presented to the Geological Society of London, in whose museum it now is.

FOX, RICHARD, bishop of Winchester, an eminent statesman, was born on the 7th of July, 1711, and 1717, son of poor parents, towards the middle of the fifteenth century, at Ropesley, near Grantham, in Lincolnshire, studied at Magdalen College, Oxford, and Pembroke College, Cambridge, and finally went to the University of Paris, where he remained the property of his family. There he lost the foundation of his fortunes, by gaining the friendship of Morton, bishop of Ely, a zealous兰cantrast, who had fled from England in 1283 upon the failure of the uke of Buckingham's insurrection against Richard II. Fox was then seen to be a great danger to the state, and was taken into: one of Richard's services; and having been at matrona in the negotiations with the French court preparatory to the descent upon England, continued to enjoy the earl's confidence after his accession to the throne 23rd of March, 1382. Mr. Fox, the present bishop of Exeter, keeper of the privy seal, secretary of state, bishop of Bath and Wells, Durham, and Winchester, and was frequently employed in important embassies. Indeed no one stood higher in favour, or had more weight with the king, who appointed him one of the executors of his will, and recommended him strongly to the notice and confidence of Henry VIII. He was also executor to Margaret countess of Richmond [Beaufort], and in that capacity had a great share in settling the found- naries of the crown: and it has been said that he often doubted appreciated his talents and integrity, for he continued him in his offices; but the habits of the aged minister, trained to frugality under a most parsimonious master, were ill suited to retain the favour of a young, greedy, overbearing, and never in any way an envious monarch, who had a great share in the government of the earl of Suffolk, lord treasurer. In hope of supplanting that nobleman by one qualified to win Henry's regard as a companion, yet too humble to aspire to the first place in the state, Fox introduced to the king a chaplain, thus his chaplain, to the king's sons, in 1513. The result is well known. Wolsely soon engrossed the king's confidence; and in 1515 the bishop of Winchester, disappointed and disgusted, retired to his diocese, and spent the rest of his life in writing with his manuscripts and other duties of his office. Corpus College, Oxford, and the free-schools of Grantham and Taunting, in Somersetshire, are of his foundation. He became blind about ten years before his death, which took place Sept. 14, 1528. He was buried in the choir of his own building, on the south side of the high altar of Winchester cathedral. (Biographia Britanica.)

FOX, JOHN, commonly called the Martyrologist, from the work by which he is principally known, was born at Bowes, in Co. Durham, 1579, and was educated at Corpus College, Oxford, in 1591, and elected a fellow of Magdalen College in 1543. Before this he had been chiefly distinguished for the cultivation of Latin poetry; but he had lately applied himself with great earnestness to the study of divinity; the result of which was that he became a convert to Protestantism, and on a charge of heresy being brought against him, was deprived of his fellowship in 1545. His father had left him some property, but this was now withheld from him, on the same ground, by a second disposal, on whose account his mother had married, and he was consequently reduced to great distress and discomfort, the situation of the tutor in the family of Sir Thomas Lucy, of Charlecote, in Warwickshire, the same whose deer-park Shakespeare is accused of robbing. This place however he left after some time, and when again subjected to many disappointments and hardships. At last he was taken into the house of Mary duchess of Richmond, to instruct the children of her brother the earl of Surrey, who was then confined on the charges for which he soon after suffered death. After the death of Edward VI. Fox was restored to his fellowship; but he fell again into difficulties in the time of Mary, in consequence of which he went abroad, and after wandering through different parts of Germany was taken into employment as a censor of the press by Oppenius, the eminent printer at Basile. On the death of Mary he returned to England, where his former connections and son of the unfortunate earl of Surrey, who was now duke of Norfolk, received him with great kindness, and settled a pension on him for life. A prebend in the church of Can- terbury was entailed to him by Henry VIII. Fox, and was to remain the property of his family, until he should receive the prebend in his own right. He was deter- mined, however, to retain the prebend in his own person: and it was settled, after some controversy, that he should retain the prebend, and pay rent for it. He died in 1597, and was buried in the church of the Holy Sepulchre, York, and is buried in St. Mary's hospital, Oxford. (Biographia Britanica.)

set a fox to wire how murtlys run
By death by death by death by death by death by death
To give them light, 'Dayes spent in print his wealth.'
(see Nichols, viii. 500; also 675.)

There is also a French translation of the abovementioned comedy under the title of 'Le Triomphe de J. C.' by J. W. H. Bienvenu, citizen of Geneva, 4to, Geneva, 1562, a very scarce work.

In a letter of Dr. Samuel Knight (author of the 'Life of Erasmus') to Dr. Z. Grey, dated Blundeston, near St. Ives.
24th of March, 1714, published by Nichols (r. 560), the writer says: 'I made a visit to old Father Strype, when in town last; he is turned ninety, yet very brisk, and with only a decay of sight and memory. . . . Mr. Strype told me that he had great materials towards the life of the old lord Byron, and Mr. Fox, the Martyrlogist, which he wished he could have finished, but most of his papers are in characters; his grandson is to decipher them.'

FOX, GEORGE, founder of the sect of Quakers, an honest, zealous, illiterate, yet of mean capacity and influence, was born at Drayton, in Leicestershire, in July, 1624. His origin and the beginning of his preaching are thus shortly told by Neal. (Hist. of Peru- 

pars, iv. c. 1.) 'His father, being a poor weaver, put him apprenticed to a leather-dyeing in the city of Paris, where he wandered up and down the countries like an hermit, in a leather doublet: at length, his friends, hearing he was at London, persuaded him to return and settle in that city, and return there he did, but after he had been some months in the country, he went from his friends a second time in the year 1646, and threw off all further attendance on the public service in the churches. The reasons he gave for this, being, because it was involved in nar-row education at the university was no qualification for a minister, but that all depended on the amount of the spirit; and that God who made the world did not dwell in temples made with hands. In 1647 he travelled into Leicestershire, with a companion, walking through dreary woods and villages, which mayower his mind turned, in a solitary manner. He fasted much, and walked often abroad in retired places, with no other companion but his Bible. He would sometimes sit as a hollow tree all day, and frequently would wander to the very ends of the roads in the midst of meadows, with deep melancholy. Towards the latter end of this year he began first to set up as a teacher of others, the principal argument of his discourse being, that people should receive the pure divine teachings of the Lord, and take heed to be led of them.'

From the beginning of his teaching he discontinued the use of outward marks of respect. He says, in his journal for 1647: 'When the Lord sent me forth into the world, he first dispossessed me of my father's house, and required me to live and shine all men and women, without any respect to rich or poor, great or small; and as I travelled up and down, I was not to buld people good or poor; good or evil; neither might I bow or scrape with my leg to any one.' He seems to have made these professions too, 'Nothing probably conduced so much to the vindictive persecution of the Quakers as their refusal of such tokens of respect, which persons in office interpreted into willful contempt, except their conscientious refusal to take any oath, which as they were Quakers, they were justified in the refusal of the oaths of allegiance and supremacy. We shall not enter on a detail of his religious tenets, labours, or sufferings; the latter are fully recorded in his journal, and noted in most histories. It is necessary however to refer to his home, (Journal, 1619, p. 260,) that 'it is not the scriptures, but the holy spirit, by which opinions and religions are to be tried.' By this test, each sect might believe himself possessed of a peculiar internal guidance. In that case, it proved a warrant for any willful fancies which entered the head of his followers. Here followed and came into extravagances which gave a colour for the cruel treatment which all experienced, (Neal, iv. c. 3.) Into such extravagances Fox himself does not appear to have fallen before he was about 30 years of age, but a few years before his death his life was made up of travel, disputations, and imprisonment. He visited the continent of Europe several times, and in 1651 made a voyage to our American colonies. Wherever he went he seems to have left permanent traces of his remarkable influence. Messing-house congregations were first established in Lancashire and the parts adjacent in 1652, and in 1657 the congregations were organized into one body for purposes of correspondence, charity, and the maintenance of uniform discipline. The term Quaker arose at Derby in 1656, on occasion of Fox being brought before one Justice Bennet, who was the first that called us Quakers, because I had then 'Trouble at the Wheel of the Lord.' In 1677, and again in 1681, he visited the Nether-lands, where his tenets had taken deep root. After his return from the latter journey, his constitution being broken by the labours and hardships of nearly 40 years, he desisted from travelling, but continued to preach occasionally in London till within a few days of his death, which took place January 13, 1691.

To Fox, and others among his associates [BARCLAY, the praeclarus pietas, self-denial, courage, and suffering;] his zeal was never amply due; and their sufferings under colour of love for the distant cause was a disgraceful evidence of the tyranny of the government and the meanness of the people. But there was one point in Fox's easy conduct which justly exposed him to resentment. He was a great lover of peace, and was more particularly so when serving in the army. It has left an elaborate tribute to Fox's virtues in the pedes to Fox's Journal, from which we extract the following detached passages:

'His extraordinary gift in opening the scriptures, but above all he excelled in prayer. The inwardness and weight of his speech, the reverence and solemnity of address and behaviour, and the trueness and fulness of his words, have often struck even strangers with astonish-ment. The power of his soul is such, that if he were to fall, I must say was his in prayer. He was of an unceasing, no busy-body, nor self-seeker a most mercurial man, a ready to forgive as unapt to give or take an offense and a resolute lover; as unwarred, so unlearned in his speech and art; a captive in war, and unwieldy moved to fear than to wrath; civil beyond all fear of breeding, very temperate, eating little and sleeping but a bulki person.' Fox's writings were for the most part short, they are very numerous, and in the course of this work they have been disposed of as a rule with the other writings of his. In this short account we shall adduce a passage: Noh History of Portraits; Scweill's History of Quakers. Also, Gen. Boig contains a better account of Fox than any old dictionary that we have seen.'

FOX, CHARLES JAMES, was born on the 29th January, 1634. While he was the third son of the Right Hon. Henry Fox, who, in 1763, was created Holland, earl of Lauder and Caroline, the eldest daughter of Charles, second duke of Richmond. He was educated in a preparatory school at Wandswoth. Fox was sent, at the age of nine, to Eton. Here his progress was very rapid; and while he he took gave unspeakable indications of the powers of mind which afterwards yielded so rich and abundant a harvest of the most awful, hallowed energy of soul over part of the soul that warmth of feeling and amiability of character which through life, served to make men his friends and keep his so. His education was interrupted, before he was fifteen by a three months' trip to Paris and to Spa, in company accompanied by his Evelina; 'and was exposed to the penalties and privations attendant on that trip; but more consequence than otherwise it could have been, if be true, as is represented, that to the misplaced indulgence of the father during this tour is to be traced the beginning of the gaming habit, which, ever after, was the principal of Fox's amusements. He had left school a boy. Mr. Allen, in his biographical sketch in the 'Encyclopedia Britannica,' etc, returned to it with all the follies and imperfections of a young man.' He continued at Eton but a year longer, and in the autumn of 1744, entered Mr. Carlisle of Corpus Christi College, Oxford, where he took his degree of bachelor of art. At Oxford he spent some time at Eton, learning and pleasure were his passions. He left Oxford in the autumn of 1746. He then went abroad, and having passed the years chiefly in Italy, returned to England in August, 1748. In November, as member of parliament for Midhurst, he took his seat in parliament as a supporter of the duke of Grafton's ministry. His father, who had supported his political measures throughout Walpole's ministry in the progress of time became estranged from the Walpole party; and it was from the opinions of the father at the period in favour of the court and of an administration whose strength was in the court, that the duke of Grafton's political measures were, as it were, based. Fox made his first speech on the 15th of April, 1769, on the subject of the famous Middlesex election, supporting the demand of Colonel Luttrell and against Mr. Wilkes. February, 1770, when the duke of Grafton was succeeded by Lord North as premier, Fox was appointed a jenueb
of the admiral. He resigned this situation two years after, in consequence of some misunderstanding with Lord North; but in less than twelve months he was brought back into the ministry, being appointed, in January, 1773, one of the lords of the Treasury. In February of the next year he was again dismissed from his situation, and that somewhat unceremoniously. The immediate cause of the dismissal was the following. A motion had been made in the House of Commons that Mr. Woodfall, the printer of the prints of the House of Commons, and the sergeant-at-arms, in consequence of some remarks on the Speaker which had appeared in that newspaper; when Fox, thinking this punishment insufficient, without consulting Lord North moved an amendment to the effect that the printer and sergeant-at-arms should be compelled, or thinking himself compelled, to support the amendment against the original motion, was left in a minority on a division. There had previously been some coolness between Fox and the premier. The defeat which Lord North considered he had in a superfluous part, act of insolent temerity on the part of Fox did not of course tend to diminish it; and a few days after, as Fox was sitting in the House of Commons on the ministerial bench, he received from the hands of one of the door-keepers the following note:—

"A motion is to be made to-morrow by one of our number, in accordance with the objectionable resolution of April last, which was carried against the influence of the treasury and in favour of an inquiry into the expenditure of the county and of a diminution thereof. A concurrence of favourable circumstances enabled the minister to stand up against this vote, and twelve months afterwards, even a dissolution of the parliament, which took place shortly after, enabled him to gain only a short respite. On the 23rd of February, 1782, a motion of General Conway's for an address to the crown against a continuance of the war was rejected by a majority of forty-four only by one vote. On the 22nd of March, 1782, a motion of Mr. Pitt, which differed, on different points of the causes, from that different form five days after, was carried by a majority of eighteen. On the 19th of March, the ministers having shown for a short time a disposition still to cling to office, resigned their situations and went into opposition.

It is needless to say how much Fox's exertions had contributed to this result. He had indeed risen by this time to be considered the leading member of opposition, and to be, more than any other statesman of the time, conspicuous in the nation's eye. At the last general election, in the autumn of 1780, he had been returned to seats of considerable importance, and had been returned in the teeth of every court effort and every trick of private intrigue and intimidation. On the formation of the new ministry under Lord Rockingham, Fox was not only spoken for, but at last instructed Mr. Grenville, the plenipotentiary at Paris, to propose in the outset the independence of the United States of America, not making it a condition of a general treaty. This he did in pursuance of the recommendation, and upon his recommendation, had been passed in the cabinet, and to which the king's assent had been obtained. But the ministry had contained within itself from the beginning the person of Lord Shelburne, who had been introduced by the king, without any explanation of his position, an element of dissension. This nobleman, between whom and Lord Rockingham's friends there was no cordial cooperation, and who was naturally led to presume much on his fancied possession of the royal confidence, was now already feeling the effects of the measure. He sought to represent the offer of recognition of independence as a conditional one; and, after Lord Rockingham's illness had rendered him unable to attend the deliberations of the cabinet, he succeeded in getting a majority to concur in his view. He was at last, in manner discovered by Fox, to be carrying on a clandestine communication with Dr. Franklin. Fox now made up his mind to resign. He did so at once upon the death of Lord Rockingham, which took place in July, but found, on the formation of the ministry; and the same course of events being repeated, with the friends of Lord Rockingham, by Lord John Cavendish, the Duke of Portland, and Lord Keppel. The Rockingham ministry was now broken up.

Mr. Pitt, though, as regards its mode of formation, was but a modification of the old one, was yet essentially different in character. Mr. Pitt, who had entered parliament on the occasion of the general election in 1780, and who, during the short time that he had the seat of power, had taken the side of statesmen and rockers against the American war and in favour of parliamentary reform, accepted the office of chancellor of the exchequer in the new ministry. Other vacant offices were filled up by old supporters of the war which Mr. Pitt had opposed, men who had held subordinate places in Lord Shelburne's cabinet, men who were excluded from the new arrangements. Hence it came to pass that Fox and Lord North, who for the last eight years had been, violent antagonists, were found by one another's side in opposition; and that after a time, the great question of peace or war with America
which had formerly divided them having been settled, and all being assured that he could place reliance upon the good faith of the other, the similarity of their political opinions brought them to an understanding. This trial of strength, which was carried out with much disapprobation. It may have been ill-judged; and the result indeed showed that the parties had not formed a correct estimate of the public opinion, which was an important element in the problem. The result was that the House of Commons was strengthened in the transaction. And inasmuch as it should be the object of every statesman to extract the greatest possible amount of good out of the political circumstances of the time, such a coalition would seem to be correct in principle, and would be approved, if only it be expedient and free from dishonour.

The question being now no longer whether there was to be peace or war with America, but in what way peace was to be brought about, the government assumed the position unopposed that it should be on the terms of peace proposed by the ministers. This was in February, 1753. The ministers, unable to obtain the king's consent to a dissolution, resigned; and after some difficulties a ministry was formed on the 2nd of April, of which the Duke of Portland was premier, and Lord North and Fox secretaries of state. This again was a short-lived administration; and, like that of Lord Rockingham, it fell by the influence of court intrigue. The principal measure which it attempted was that known by the term East Indies Bill. This bill was to give the government of the East Indies in a board consisting of seven members, who were to be appointed, the first time by parliament, but always afterwards by the crown, for a period either of three or five years. The objections to the bill were various—some said the crown did not adopt Mr. Fox's own mode of putting them—'and increase of influence of the crown;' but there were others again who denounced it as tending to diminish the influence of the crown for the aggrandisement of the ministers, and who opposed it. This was squashed in the House of Lords by George III himself. Accordingly, when the bill had passed through the Commons, and came on for the second reading in the Lords, the king sent a message, through Lord Temple, to all noblemen to whom his personal influence extended, to vote against the bill not only not his friends, but his enemies. The ministers were consequently left in a minority. The next day they were dismissed; and the ministry which had been formed in April ended its career in December of the same year, and the new ministry was formed almost immediately under Mr. Pitt.

The new ministers very soon found themselves in a minority in the House of Commons. Two resolutions, one for presentment of any treasury, exchequer, or bank of England, in case of a prostration or dissolution, unless the supplies should be previously appropriated by act of parliament; and the other, postponing the Mutiny Bill, were moved by Fox and carried by divisions. These resolutions were to render an immediate dissolution impracticable. Resolutions against the ministers and against the mode of their appointment, together with addresses to the crown for their dismissal, followed. But the majority against ministers, which at first had been formidable, fast dwindled down; and after the king had twice refused his assent to their dismissal, he dissolved the parliament. The last effort of the opposition had been the carrying of a representation to the crown, which, written by Fox, pointed out four objections to the administration of the right hon. Mr. Pitt, and was at variance with a majority of the representatives of the people.

Fox was again elected for Westminster; but Sir Cecil Wray, the unsuccessful candidate, having demanded a select committee of any part of any county, borough, or bank of England, in case of a prostration or dissolution, unless the supplies should be previously appropriated by act of parliament; and the other, postponing the Mutiny Bill, were moved by Fox and carried by divisions. These resolutions were to render an immediate dissolution impracticable. Resolutions against the ministers and against the mode of their appointment, together with addresses to the crown for their dismissal, followed. But the majority against ministers, which at first had been formidable, fast dwindled down; and after the king had twice refused his assent to their dismissal, he dissolved the parliament. The last effort of the opposition had been the carrying of a representation to the crown, which, written by Fox, pointed out four objections to the administration of the right hon. Mr. Pitt, and was at variance with a majority of the representatives of the people.

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but to no purpose. Mr. Burke remained relentless; and the breach was never made whole.

Fox distinguished himself during the same session of 1791 by his opposition to the ministerial project of an armament against Russia, by his support of Mr. Wilberforce's motion for the abolition of the slave trade, and by his introduction of a bill towards the expulsion of episcopal bishopesses. From the latter part of 1792 to 1797 his efforts were unceasing, first to prevent a war with France, and afterwards, when his warnings had been of no avail, and it had been carried into execution, to bring it to a close. During this period many of his friends, filled with anxiety about the future and the probable consequences of events in France, and the probable influence on their own countrymen, left him to swell the majorities of the ministry; and indeed the same influence supported all but a few of the events of which he was the author. From 1792, he gave to Mr. (now Earl) Grey's famous motion for parliamentary reform, his eloquent advocacy in 1794 of the cause of Muir and Palmer, the Scotch Catholic martyrs, his indefatigable opposition to the treason and sedition bills of 1795, and his attempt to procure attention to the state of Ireland and to the grievances of Irish Catholics, by a motion made in 1797, as additional important incidents during that period of his career, the principality of which was opposition to the first French revolutionary war.

On the 26th of May, 1797, Mr. Grey made a second motion on the subject of parliamentary reform. Fox took this opportunity of announcing a resolution which he had formed to induce Mr. Grenville to resign his office, and to dismiss the whole ministry, and his friends were destitute of power to carry out their views. It is perhaps a question whether such a step as this can be taken by a member of the legislature without dereliction of duty, even though it may be a means of influencing public opinion to produce the desired effect, and though the consent of the member's special constituents may have been procured thereto. But, at the same time, it would be unjust to apply to the conduct of individuals acting under a very defective system of representation, the principles which govern the action of a party, of a perfect theory. The five years then, from 1797 to 1802, were passed by Fox principally at St. Ann's Hill, in retirement, and in the pursuits of literature. It was during this period of retirement that he formed the project of his "History of the Reign of James II." A resolution of parliament took place in June, 1802, and Fox, whose popularity with his constituents had not been a whit diminished by his absenting himself from the house, was again returned for Westminster. Almost immediately after his return he published a collection of his speeches, with a brief introduction, in which he disabused the public of the purpose of collecting documents for his projected historical work. During his stay in Paris it is said that he was treated with marked attention by Napoleon.

Mr. Pitt retired from office in March, 1801, on finding that he was under discussion in the House of Commons, Fox had formed from his retirement to express his joy at the prospect now opened of a conclusion to the war, and to give his best support to the ministry. His next motion to the ministry was on the same subject in the autumn of 1802, still hoping to contribute to the bringing about of peace, but beginning by this time to doubt the sincerity of the ministers. A message from the crown, in May, 1803, announced that the negotiations for peace had been discontinued and the ministry resigned office, having completely shown its unfitness for the discharge of its duties, and unable to stand against an opposition which included both Fox and Pitt. It was now hoped that Mr. Pitt, to whom was intrusted the making of the peace, and who was a co-operator with Fox, might continue in the house of commons, Fox by whose side, though not in recognized connection, he had been now sitting for some time in opposition. But the king would not hear of Fox being admitted to office. Lord Grenville, Lord Spencer, Mr. Wellesley, and Mr. Fox were all members of the house of lords, co-operating with Fox, refused to take any part in an administration from which Fox was excluded; and Mr. Pitt was thus compelled to throw himself upon the scattered subordinates of the Addison ministry." Peace came not from this ministry. On the 3rd of January, 1806, Mr. Pitt's death dissolved it; and in the 36th month of a war which was formed under Lord Grenville, Fox was appointed secretary for foreign affairs. His life was spared but for seven months longer; but during this short period he did much to carry the abolition of the slave-trade, which had ever been one of the objects that he most regarded, and entered zealously into negotiations for peace with France, which it was a heavy misfortune to his country that his death did not allow him to complete. He died on the 13th February, 1806, at the age of 56. The complaint which caused his death was water on the heart.

Such is a brief sketch of the public life of Fox. With the exception of the first six years of it, in which he was either a supporter or a member of a court administration, he was in substance an opponent. From the beginning to the end it was honest. There are parts of his public life certainly which have led others to call his honesty into question, and to deny to him the quality of consistency; and of these parts, or at any rate some of them, there are those among his friends and his accusers who have professed disapprobation. Such parts are his early connexion with the court, his coalition with Lord North, and, shortly before his death, his coalition with Lord Grenville. Mr. Hazlitt has observed that "his success in the three principal points, the beginning, the middle, and the end of Fox's career, was due to a violent turn, and became a flaming patriot out of private pique; he afterwards coalesced with Lord North, and died an accomplice with Lord Grenville."

"(Political Essays and Paul's Cursitor's Inn"

Mr. Burke was the most Demoiselleist, or rather the most modern, of the moderns. He always displayed in a preeminent degree a sense of the importance of principle. Sir James Mackintosh has said of him, as an orator, that "he possessed above all moderns that power of speaking which formed the prince of orators. He was the most Demosthenesque speaker since the days of Demosthenes." Fox's speeches were collected, and published in six volumes with a short biographical and critical introduction by Lord Erskine, in 1809. The friend of which he left of his projected history of the reign of James II. was published in 1808, with a preface by Lord Holland.

FOY: MAXIMILIAN SEBASTIAN, one of the best if not the first, of the political orators that have appeared in France since the establishment of a constitutional charter, was born in 1775, at Ham, in Picardy. His father, an old line of French nobility, was only five years old, and the education of his five children devolved upon Elizabeth Wubeck, who was a woman of English extraction, and of a superior character. FoY displayed from his earliest boyhood remarkable talents and great application. He made his money in London. He published some well-written little compositions in his own language, at the age he was only nine years old. At fourteen he completed his course of studies at the college of Soissons, after which he passed to the military school of Lafiore, and, at the end of five years, entered the army, and was soon distinguished. He served with great credit in Flanders during the beginning of the war of the Revolution. Having however expressly expressed his opinions about the horrors perpetrated at Paris, he was imprisoned, but was released from his confinement by the event of the Pitt ministry. He entered the army, made two campaigns under Moreau, and rose to the rank of a chef d'escadron, when the treaty of Campo Formio suspended his military career. He took
advantage of the short peace which followed that treaty to study public law under the celebrated Professor Koch at Strasburg. In 1798 he again joined the army, and served in Italy, Switzerland, and on the Rhine, till the peace of Amiens, when he returned to France with the rank of colonel. For two years during the trial of Moreau, and he expressed himself against that proceeding with so much animation, that he would have been arrested if he had not left the capital and joined the camp of Utrecht, where he refused to sign a congratulatory address to the first consul on the occasion of his escape from the conspirators. He was very far from approving of any such schemes, but he gave no credit to the accusations against Moreau, under whom he had a long time served. Being a sincere republican, he voted against the election of Bonaparte to the post of governor of Egypt. But this independence of his character drew on him the abuse of Moreau, but he left him a long time without protection. In 1807 Foy was commissioned by Napoleon to conduct 1200 French cannibals to assist Sultan Selim II, against Russia, but the revolution which broke out before his departure. Foy himself went however to Constantinople, where he assisted the Turks in making dispositions for the defence of the Dardanelles. From Constantinople he went to Portugal, distinguished himself in many battles where he was employed Foy. but left him a long time without protection. In 1818 Foy was employed at the restoration of the Bourbons, but joined Napoleon after the battle of Tilsit, and boldly attacked his cause where he was again wounded. From that time he retired from military service, and devoted himself entirely to the study of history, political and military science, to which he had previously applied all his leisure time. In 1819 Foy went to the court of the emperor of Austria, and with the talents which he displayed in the new care opened to him surpassed the most sanguine expectations of his friends. His debut in the parliamentary field was an eloquent defense of the rights of his old companions in arms, the veterans of the Napoleonic army, whom the Restoration sought to deprive of their well-earned rewards. He vigorously attacked the lavish expenditure of public money for the maintenance of useless establishments, and to support the instruments of the constitutional party; he also advanced a virile defense of every expenditure which was requisite for the support of the power and dignity of a great nation. Foy had a hard battle to fight against the retrograde party, which sought to destroy the offensive and defensive position of the country, by introducing into the electoral body the privileges which had been abolished by the above-mentioned charter. Yet the noble efforts of Foy and of a patriotic minority were vanishing against the party, which, according to an expression of Foy himself, reduced the legislative chamber to a few members and in the nation one individual in a thousand. Counter-revolutionary measures followed one another; the elective franchise was restricted, the liberty of the press curtailed, independent writers prosecuted, and the constitutional government of Spain overturned by a French expedition. Notwithstanding all these defeats of the liberal party, Foy never deserted the post where he was placed by the confidence of his countrymen, and he castigated the unprincipled combinations above referred to with an eloquence worthy Cicero, disposing the excursions of a Verres or the plots of a Catiline. When provoked by his enemies, who never lost an opportunity to attack him in a most annoying manner, he sometimes burst out into the most eloquent but hitherto unfelt expressions, and on one occasion, being actuated by a speech a scorching question, what he meant by the expression aristocrate? He made an answer which has been perpetuated in the annals of the French parliamentary debates: 'The aristocracy of the nineteenth century,' said he, 'is a phenomenon; all those who produce, to live without working, to occupy all situations without being able to discharge the duties attached to them, to possess all the honours without having deserved them—this is the aristocracy.' In November, 1824, Foy began to suffer from the symptoms of an aneurism: he felt his end approaching, but remained calm and collected under the most severe sufferings, till his death on the 25th November. His death was considered in France as a national calamity: his funeral was attended not only by his political friends, but even by his opponents who no longer refused to pay the tribute of just admiration to a deceased adversary. As he left a family in a rather straitened circumstances, one million of francs was raised for them by a national subscription. Foy left two volumes of speeches, and a History of the Peninsular War, a work which is much esteemed, but unfortunately has not been completed. Few works have possessed the merit of the fairness with which it treats the opponents of France during that memorable struggle, and it has been warmly eulogized not only in France but even in England by writers professing political opinions completely opposed to those of General Foy.

FOYLE, LOUGH, a bay on the northern coast of Ireland, whose narrow entrance is 33rd of Greenwhich. It extends from south-west to north-east about fifteen miles, and is in the middle eight miles and three quarters wide, but only thirty feet deep. The bay lies between Magilligan Point on the east, and Green Castle on the west, is less than a mile across. The bay, being much cumbered with shoals, requires some attention in navigating vessels. The town of Foyle, which is situated on the lake and its mouth. Near Green Castle there are some ten fathom's water. In front of the entrance a sand-bank called the Tuns, over which the sea sometimes breaks with great violence. Vessels of 400 tons and over are not advised to proceed through it, and the river Foyle, which falls into its southern extremity, as far as Londonderry.

FRACASTORO, Hieronymus, one of the most learned men of his time, as well as one of the best modern Latin poets, was born at Verona, in 1453, of an ancient and noble family. In 1505 he was elected to the chair of literature in the university of Padua, and there spent many years in the study of the sciences, particularly to medicine, and became professor of logic at the university of Padua when he was only nineteen years old. Fracastoro died in 1533. He enjoyed during his lifetime the esteem and friendship of many eminent men, and was among the admirers of Fracastoro the idea as well as many materials for his collection of the 'Navigazioni et Viaggi,' erected a brass statue to his memory at Padua. Julius Caesar Scaliger was such an admirer of Fracastoro's poetical talents that he has joined the biography of his works to the history of the peninsular revolution. The principal works of Fracastoro are: 'Syphilides, sive Monti Galli, libri tres,' published at Verona, 1539, in 4to; 'De Historiis, 1531 et 1539, in 8vo and 16mo; Basil, 1536, in 8vo. A second collection,' L'Amor per l'Amor, London, 1720, in 4to, and 1746 in 8vo; Padua, 1744, in 8vo. It has been translated into French by M. de la Ronciere, Paris, 1753, in 12mo; and into Italian by Antonio Tinambro, Verona, 1739, in 4to; and by Pietro Bello, 1774, in quarto. The Italian translation is however that of Vinti Benini de Colonia, published, with the complete collection of Fracastoro's works, at Padua, 1739, in 4to. Fracastoro's reputation rests chiefly on this work, which has been dedicated to Helen. It is a poetical epistle, of which Rosenau has given an English translation in his life of Leo X. In this poem Fracastoro rejects the commonly-received opinion that the disease which is the subject of his poem, was imported from Egypt, or at least from Syria, and was generated by the corruption of the atmosphere, to which he attributes the origin of all diseases that attack the animal and vegetable creation. He recommends as a means of eradicating that fatal disease the use of mercury, which describes the manner of that remedy in a fiction full of the greatest poetical beauties. The hero of the poem is a young man called Syphilis, who is attacked by that disease, not in consequence of any profane that had been the slave of woman, but by having three times into the streams of quicksilver, which flow in the subterraneous regions. It is remarkable that the same name of the hero from which the title of the poem is derived gave birth to the technical appellation by which the mercury is known. In the very same time that the subject for his poem Fracastoro wished to display in the work his extensive knowledge in the various branches of natural philosophy, his skill in medicine, and his admirable genius for Latin poetry. Many critics have compared the Syphilis to the Georgics of Virgil, and the Aeneid of Sannazaro, the contemporary of Fracastoro, declared it to be superior to his own Latin poem 'De Partu Virginis,' on which he was he twenty years. Besides the poem of 'Syphilis,' Fracastoro published the following works: 'De Viti Temperat.,' 4to; 'De Chirurgia, sive de Stilb, liber unus' de Causa Crittorum diebre, libelli, Venice.
FRAC TIONS, COMMON AND DECIMAL. By a fraction is meant, in the first instance, a part of any magnitude. Thus, the word 'fraction' means three units and a part of a fourth. The next meaning of the term confines fractions in an arithmetical point of view, to the aliquot parts or submultiples of the unit; which unit must therefore be divided into equal parts, of which particular numerators are to be taken.

Under the heads Addition, &c., will be found the various rules by which operations concerning fractions are conducted. We shall here confine ourselves to fundamental points connected with the theory.

A fraction is thus denoted: \( a \) \( b \) means the quantity obtained by dividing a unit into \( b \) equal parts and taking \( a \) of those parts. If \( a \) be greater than \( b \), it will obviously be necessary to divide more units than one, each into \( b \) equal parts, until enough have been subdivided to furnish the \( a \) parts required. It was usual, in English works on arithmetic, to call fractions in which \( a \) is less than \( b \), proper fractions; and all others improper fractions: this absurd distinction is now beginning to be abolished. In the preceding fraction \( a \) is called the numerator, and \( b \) the denominator. The first term is correct, for \( a \) is the number of parts of a certain kind which are to be taken; the second is not quite correct, for the denomination of which the number \( a \) is to be taken, is not \( b \), but \( \frac{1}{b} \); the \( b \)th part of a unit (not \( b \) units) is to be repeated \( a \) times.

Thus 12 may be considered in several different ways. It is 1st, the \( b \)th part of a unit repeated \( a \) times; or, in common language, \( a\)-ths of a unit; 2nd, the number of times, or parts of a time, or both, which \( a \) contains \( b \); 3rd, the proportion which \( a \) is of \( b \); 4th, the expression which ought to be written for \( a \), on the supposition of that which was \( b \) units being made the unit. Thus \( \frac{1}{b} \) expresses two-fifths of a unit, the \( b \)th part of a time which \( 2 \) contains \( 5 \); the proportion which \( 2 \) is of \( 5 \); and the expression which must be written for what is now \( \frac{1}{5} \), when that which we now call \( 2 \) is alone used. All this can be stated without exception except the first, are perfectly intelligible when we write a fraction in which the terms are both fractional. Thus

\[
\frac{1}{3} \cdot \frac{1}{2} = \frac{1}{6}, \quad \frac{2}{3} \cdot \frac{1}{4} = \frac{2}{12}, \quad \frac{6}{7} \cdot \frac{2}{7} = \frac{12}{49}.
\]

may be thus explained. We can readily imagine the part of a time which \( \frac{1}{12} \) is of \( \frac{1}{3} \), the proportion which is first of the second, and the expression which must be substituted for \( \frac{1}{3} \) when a larger unit is used, amounting to \( \frac{1}{3} \) of the present unit. All this can be stated without exception except the first, are perfectly intelligible when we write a fraction in which the terms are both fractional.

The generality of mathematical conceptions is frequently destroyed by the introduction of the language of arithmetic. The process of adding two fractions may be considered in its general term as the sum of all those combinations which depend on singular and plural, noun and pronoun, &c. Thus, when we speak of the answer to a problem being a number of feet (unknown), it is better to allow the word to imply a part of a foot, a foot itself, or a number of feet together with a part of a foot, than to repeat all those possible cases every time a number is to be mentioned.

Again, when one particular phrase seems absurd, but another which is synonymous appears clear, we must either reject the former altogether, or attribute it to the meaning of the latter, and the second course is generally the more convenient. We now observe that the direction to 'divide one into 10 equal parts' is the same as 'find a part such, that ten of them shall make a unit.' Now this is not absurd in regard to 'find a part such that 3 of them shall make a unit,' though it is inconsistent with our idiom to speak of 'dividing 1 into 3 equal parts.' The meaning of the phrase which is intelligible should therefore be extended to that which is not, or 'to divide one into 1/10 equal parts.' We should there extend this extension as far as is possible on this point until they have learnt to include every possible form of \( a \) \( b \) under one definition.

The fundamental property of fractions on which all others depend, is this—that no fraction is changed in value by multiplying or dividing both its terms by the same number or fraction, that is—

\[
\frac{3\times10}{5\times10} = \frac{3}{5}, \quad \frac{2}{5} = \frac{2\times10}{5\times10} = \frac{2\times10}{5\times10}.
\]

There is another theorem which is much neglected in elementary works, but which is of considerable importance, namely, that if the numerators of two fractions be added for a numerator, and their denominators for a denominator, the resulting fraction must lie between the two from which it was derived. Thus of the three fractions,

\[
\frac{2}{5}, \frac{6}{7}, \frac{2+6}{5+7} = \frac{8}{12} = \frac{2}{3}, \quad \frac{1}{100}, \quad \frac{1}{100} + \frac{1}{100} = \frac{1}{100} + \frac{1}{100} = \frac{1}{200},
\]

the third is greater than the first, but less than the second.

In practice it is convenient to employ fractions having either the same denominators, or which can be reduced to others of the same numerators. The numbers 10, 100, 1000, &c., suggest themselves for this purpose: indeed it may immediately be seen that the ordinary system of decimal notation may be extended so as to allow of the use of these for fractions.

If we consider the number 11111, we see that for every step which we make to the right, we find a unit which is only the tenth part of the preceding unit. Place a point after the unit's place (to mark its position), and let the unit's place be 11111111. The method of converting 11111111 into 11111111 is this: 1st remove one from each unit, or to the right of the point, and we shall have 11111111. Then add to the point, one-tenth of the preceding, or one-tenth of a unit; the second for one-tenth of a tenth, or one-hundredth, and so on. The fundamental theorem of decimal fractions, in the new system of numeration is this: that which is the product of 127245 (defined to mean 1 ten, 2 units, 7 tenths, 4 hundredths, 3 thousandths, and 5 ten-thousandths) is the same as 127245 ten thousandths; or that all the number, such as it would be.
be if the units' column were on the right, may be taken as a numerator, and the denominator of the right hand figure as a denominator. Thus—

\[
\frac{63483}{10000} + \frac{6 + \frac{4}{10} + \frac{6}{100} + \frac{3}{1000}}{10000} = \frac{300000}{4100000} = \frac{3}{73171} = \frac{3}{1000000}
\]

or \( \frac{3}{7317} \) hundred thousands of a unit differs from \( \frac{3}{41} \) by only \( \frac{3}{41} \) of the hundred thousandth of a unit, or by less than the hundred thousandth part. It is from such a transformation that the common rule is derived.

It is common to say that a result is true to a certain number of places of decimals when any alteration of any place would make it further from the truth. Thus, the diameter of a circle being unity, the circumference lies between \( \pi \cdot 1415 \) and \( 3 \cdot 1416 \), but nearer to the latter; whence the same circumference, true to four places of decimals, is \( 3 \cdot 1416 \). Similarly, \( \frac{a}{b} \), taken true to two places, is \( \frac{a}{b} \); to three, \( \frac{a}{b} \); to four, \( \frac{a}{b} \). Again, \( \frac{a}{b} \), taken true to two places, might be either \( \frac{42}{63} \); but the latter is generally taken. When a decimal fraction cannot be found exactly equal to a given common fraction, the division by which the numerator is found, leads to what is called a CIRCULATING DECIMAL.

For subjects closely connected with the theory of fractions, see Ratio: Proportion: INCOMMENSURABLE.

FRACTIONS CONTINUED. A continued fraction is one which has a fraction in its denominator, which again has a fraction in its denominator, and so on; such as

\[
\frac{1}{2 + \frac{3}{7 + \frac{6}{1 + \frac{2}{3}}}}
\]

A more convenient way of writing such fractions is desirable; in the present article we shall adopt the following:

\[
\frac{1}{2 + \frac{3}{7 + \frac{6}{1 + \frac{2}{3}}}} = \frac{b + c}{d + e}
\]

Thus \( \frac{b + c}{d + e} \) is written \( \frac{a}{b + d + f} \).

The use of continued fractions is as follows:—by converting a common fraction, with a large numerator and denominator, into a continued fraction, we are able to find a succession of some simple fractions, which are alternately greater and less than the given fraction, and approach to it with great rapidity. Let \( a \) be the given fraction, a being less than \( b \); proceed as in the rule for finding the greatest common measure of \( a \) and \( b \), and let \( q, r, s, t, \&c. \) be the quotients obtained in the process; then

\[
a = \frac{b}{q + \frac{1}{r + \frac{1}{s + \frac{1}{t + \&c.}}}}
\]

For instance, let the fraction be \( \frac{5119}{28319} \) or \( \frac{2394}{11057} \&c., as in the method of finding the greatest common measure.

The successions of quotients thus obtained is

\[
\frac{5}{1}, \frac{1}{2}, \frac{7}{1}, \frac{1}{3}, \frac{1}{4}, \frac{1}{2}, \frac{3}{1}, \frac{1}{2}, \frac{2}{1}, \frac{4}{1}, \frac{2}{3}, \frac{1}{4}, \frac{2}{3}, \frac{1}{4}, \frac{1}{2}
\]

which are to be used as follows in forming the succession of approximate fractions. The first and second are always,

1st first quotient in this case \( \frac{5}{1} \)
2nd fraction \( \frac{1}{2} \)

Thus

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<td>1052</td>
<td>28319</td>
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The succession of fractions continually approaching to the given fraction, and ending in \( 6 \), is then

\[
\frac{5119}{28319} (5 \text{ to } 11057 \text{ to } \frac{3}{2} \text{ till } \frac{1}{2}, \frac{4}{3}, \frac{1}{3}, \frac{1}{2}, \frac{4}{3}, \frac{1}{3}, \frac{1}{2}, \frac{4}{3}, \frac{1}{3}, \frac{1}{2})
\]

these approach nearer and nearer to the last, than which they are alternately greater and less; the first greater, the second less, the third greater, and so on: but the second is not so much too small as the first is too great, nor the third so much too great as the second is too small, &c. The error committed by assuming any one of the approximate fractions instead of the final result, is less than a fraction having unity for its numerator, and the product of the denominator in question and the next denominator for its denominator. Thus

\[
\frac{5}{6} \text{ is not wrong by } \frac{1}{6} \text{ or } \frac{1}{30}
\]

\[
\frac{1}{6} \text{ to } \frac{1}{11} \text{ or } \frac{1}{66}
\]
If it be desired to verify one of the fractions without proceeding to the end of the process, observe that the nomenclature of the difference of any two succeeding fractions is unity. Thus—

\[
\begin{align*}
1 	imes 6 & \text{ exceeds } 1 	imes 5 \text{ by } 1 \\
1 	imes 11 & \text{ falls short of } 2 	imes 5 \text{ by } 1 \\
2 	imes 5 & \text{ exceeds } 1 	imes 11 \text{ by } 1 \\
13 	imes 50 & \text{ falls short of } 3 	imes 50 \text{ by } 1 \\
& \text{ etc.}
\end{align*}
\]

No fraction, having a less denominator than one of the approximate fractions, can come so near to the original fraction as the one which is obtained by the process. Thus, \( \frac{63}{83} \) is nearer to \( \frac{63}{560} \) than any possible fraction which has an integer numerator, and an integer denominator less than 603.

FRACTIONS, VANISHING. This term is applied to fractions in cases where a supposition is made which destroys both numerator and denominator at the same time. Thus—

\[
\begin{align*}
ax - a & = \log x, \\
x - 1 & = b - b',
\end{align*}
\]

are fractions which all assume the form \( \frac{0}{0} \) when \( x = 1 \); that is, though for any other value of \( x \) they represent operations of ordinary arithmetic, yet in the particular supposition that \( x = 1 \), they all end in a direction to find out how many times \( \text{nothing} \) is contained in \( \text{nothing} \). The first answer to this seems to be how that fraction may, in such a case, have any value we choose to assign, for nothing taken or, or two, or three, is nothing. It is to say, according to the rules of common algebra, since \( 0 = 0 \times a \), whatever \( a \) may be, it follows that \( 0 \div d = 0 \div 0 \), which is 0. But this is carrying operations which are defined with regard to magnitudes further than is contemplated in the definition, and applying them to a symbol which simply represents the absence of all magnitude. Such a process may then be rejected without scruple.

But this question remains: granting that the preceding reasoning does not entitle us to give the preceding fractions any value we please, can they be said to have a value at all? Similarly it may be proved of the second and third fractions that they have values when \( x = 1 \), these values must be 1 and \( a \log b \).

Much discussion has arisen as to whether vanishing fractions have values or not, as if such a question could be one of deduction from the ordinary reasonings with regard to magnitude. The truth is, that any one may either assert that such fractions have values, or may altogether refuse to consider them, according to his ideas of convenience or propriety. Nobody doubts that if the answer to a problem were

\[
y = \text{the value of } \log x - x
\]

one of two courses must be taken; either the value of \( y \) must be declared to be unity, or the evanescent form of the fraction must be recognized as arising from a misconception of the problem, by which factors of the form \( x - 1 \) (where \( x = 1 \)) have been used under the idea that they were of the form \( x - 1 \) (where \( x = 0 \)). The problem must then be reconsidered, and the (so called) mistake corrected. But the correction will always lead to the result \( y = 1 \), and those who employ the second method in preference to the first will not deny that they knew as much when they first saw their (so called) erroneous result.

It is not worth while to discuss the particular arguments used with respect to the isolated question of vanishing fractions, since the difficulty raised with regard to them belongs to a class of questions so extensive that they might form the subject of a separate science. Under the heads, Nominal—Infinity—Limits, Theory or—&c., will be found those considerations which apply to all cases.

The method of finding the value (or correction, if the reader please) of a vanishing fraction whose numerator and denominator disappear when \( x = a \), is to make a new fraction with the differential coefficients of that numerator and denominator and then to substitute \( x = a \). If the result be still a vanishing fraction, repeat the process with new differentiations, and so on. Thus to find the value of the third fraction above mentioned—

\[
\begin{align*}
diff \text{ co. of } a^5 - a & = a^4 \log a \\
diff \text{ co. of } b^5 - b & = b^4 \log b \\
a^4 \log a & \text{ when } x = 1, = b^4 \log b
\end{align*}
\]

FRACTURE. Injuries complicated with the breaking of a bone are called fractures.

The comparative importance of such accidents depends in the first place upon that of the bone which is broken. The most dangerous fractures in this point of view are those of the limbs, head, and skull, where they are immediately essential to life, and extremely susceptible of injury. The processes, or projecting parts, of the vertebrae are sometimes broken without very serious consequences; but if any of the rings of bone which encompass the spinal chord be thus broken, the death must immediately follow, and the danger is imminent in proportion to the nearness of the injured vertebra to the head. If the fracture take place above the fourth vertebra of the neck, raking downward, death is generally instantaneous from paralysis of the spinal cord.

Fracture of the sternum can scarcely happen without the direct application of considerable force; and for that reason is both serious and rare. The ribs, on the contrary, are more easily and frequently broken than any other bones, and that far more frequently than the vertebrae.

[PLEURISY; PNEUMONIA.] This danger is of course increased if the lung be wounded by the splintered ends of the bone, which is sometimes the case, especially when the fracture is the result of direct force. The bones of the pelvis are seldom broken, for the same reason that determines the rare occurrence of fracture of the sternum; but the accident is generally serious, and not unfrequently fatal, from injury to the bladder and other important organs included in the pelvis cavity, or connected with the bones which circumscribe it; particularly, fracture of the base or floor of the skull is often instantly fatal, for analogous reasons.

The sternal, or breast-bone, and ribs, cover parts not so immediately essential to life, and, for many reasons, not so liable to suffer from violence done to their external defences as those to which we have already adverted. Fracture of the sternum can scarcely happen without the direct application of considerable force; and for that reason is both serious and rare. The ribs, on the contrary, are more easily and frequently broken than any other bones, and that far more frequently than the vertebrae.
tion of certain technical terms, by which important varieties of these injuries are distinguished; and which, though frequently made use of in conversation and in the course of judicial proceedings, are often misapplied or imperfectly understood; with this we shall interlarded with as much general information as possible, subjoining what may be necessary to complete an outline of the whole subject.

It can hardly be necessary to explain what is meant by transverse and oblique fracture: we may observe, however, that the terms are impractically employed, and do not illustrate the first, or transverse variety, the bluntness of the ends of the broken bone in some measure preserves the contiguous soft parts from laceration at the time of the accident; it also opposes a considerable obstacle to the displacement which were it not for the muscular external and internal, and it conduces both to the diminution of present suffering and to the prosperous event of the case, by facilitating the speedy and perfect restoration of the displaced bone to its proper situation, and its steady retention, when restored, by mechanical means.

On the other hand, as most of the bones liable to fracture are cylindrical, or present flattened surfaces meeting in as many solid angles, if they be broken obliquely, the ends of the bone will be sharp-edged, pointed; hence they are surrounded by soft parts; from each of these to a much greater extent than is usual in transverse fracture, and there is not only much more suffering from the laceration of sensitive parts and from portions of them being included and pressed between the broken surfaces, but the very facility is experienced in disentangling the ends of the bone, and bringing them into close apposition; and still more in retaining them, from their tendency to slip past each other during the spasmodic and powerful contractions of the surrounding muscles. The fixation of such fractures is often unsatisfactory, in spite of the utmost care and skill; and some distortion and shortening of the limb is inevitable in severe cases.

Commminuted Fracture. — When a bone is crushed, or fissures pass in every direction, so that portions of it are detached from the rest, the fracture is said to be comminuted. From the facility generally experienced in replacing the bone, or at least in straightening and supporting the limb in these cases, they often end better than apparently less serious transverse fractures. Perhaps one reason may be that the direct application of force, by which they are generally produced, has some effect in stupefying the muscles and lessening the injurious influence of their contraction. If there be much contusion of the soft parts, considerable internal hemorrhage may supervene, and, if the fracture be extensive in the cellular tissue between the muscles, the aponeurotic expansions which invest and separate them, and within the synovial sheaths of their tendons, the degree of inflammation among these parts is so great as to render the blood of such fractures, if not into a coagulated state, at least at an affair of many months of suffering and sclerosis. This remarkable difference originates in the wider constitutional symptoms of the skin as an organ of sensorium and secretion; in the importance of its function as a covering for the bone to which it is attached, and, indeed, at best an affair of many months of suffering and sclerosis.

The diagnostic of induration and lacerated wound. It further results from the tendency of the inflammation to propagate itself from the edge of the skin along the track of the wound to the periphery of the bone, and to produce a series of processes and certain phenomena in the cellular tissue, such as the mucous expansions which invest and separate the parts, and within the synovial sheaths of their tendons, the extent of inflammation among these parts is so great as to render the blood of such fractures, if not into a coagulated state, at least an affair of many months of suffering and sclerosis. This remarkable difference originates in the wide constitutional symptoms of the skin as an organ of sensorium and secretion; in the importance of its function as a covering for the bone to which it is attached, and, indeed, at best an affair of many months of suffering and sclerosis.

Fracture extending into a joint. — A bone may of course be broken at the situation of a joint; or, if the fracture occur at some distance, a fissure may extend longitudinally into one of these cavities. This circumstance is a very important aggravation of the injury. The synovial membranes, which line the joints, are particularly impervious to irritation, and when they become inflamed, the constitutional disturbance is often considerable, and the attendant, or, as it is called, the symptomatic fever, is of a very acute type. When the larger joints, such as the knee, are concerned in injuries of this kind, the old terms frequently recurred denominated amputation of the limb. Modern experience has shown that this may generally be dispensed with; but the greatest skill and watchfulness are required and often baffled in endeavouring to prevent the occurrence of a stiff joint and disability. It is therefore of the utmost importance that, if it should occur, a position which is not always the most conducive to the case, or indeed to the recovery, of the patient, and therefore not always eligible.

Fracture complicated with dislocation. — If a bone be dislocated, and then broken, it may be impossible to carry into effect the measures which are necessary for the satisfactory treatment of either injury, and the result is permanent distortion and crippling of the limb. This is of course an extreme case, and is not likely to happen unless the fracture take place near the dislocated joint, so that a firm hold cannot be taken of the detached end of the bone. If however the fissure in the bone does not extend to the joint, the constitution does not, upon the whole, suffer as usually might be expected in consequence of the double injury, except in particular cases, such as those complicated with traumatic delirium, or, which, as the subject is curious, we shall here take occasion to say a few words.

Traumatic delirium (grippe, a round). This affection is by no means confined to accidents with dislocation injuries of which fracture forms a part. It appears to be more frequently a consequence of injuries of the nature than of others, and particularly of fracture of the fibula immediately above the ankle, which is often followed by a delirium of several days' duration. For want of a better idea of a delirium, it is generally very talkative, and in a state of great alarm and apprehension, expecting, for instance, to be led to execution for some fancied crime. He is commonly pale and cold, free from fever, and quite unconscious of the pain, now severe, or then your, which was at first so great, now appears to be about the room, using his shattering limb with perfect unconcern. Traumatic delirium has some points of resemblance with delirium tremens, and, like it, occurs for the most part in persons over-stimulated by inebriation. It is sometimes fatal, but may generally be resisted by large quantities of wine and opium.

Compound fracture. — If the injury of which we are treating be confined to the bones and the parts immediately around them, the fracture is said to be simple; but if the bone be protruded through the skin, or an external wound otherwise inflicted communicate with the laceration between the broken surfaces, the fracture is said to be compound. However small the wound in the skin may be — in fact, it may be a point — the extent to which, though it rarely succeeds, should always be attempted, this is by far the most serious aggravation of the injury, whether we regard the suffering of the patient, the progress of the case, or the prospect of recovery. A simple fracture may be healed with safety by the use of such fixating bandages that the part is not placed generally with confidence to be well enough to permit the accustomed use of the limb in a period ranging from two to eight weeks; the pain and constitutional disturbances seldom lasting beyond a few days. But a compound fracture may threaten life, or at least at best an affair of many months of suffering and sclerosis. This remarkable difference originates in the wide constitutional symptoms of the skin as an organ of sensorium and secretion; in the importance of its function as a covering for the bone to which it is attached, and, indeed, at best an affair of many months of suffering and sclerosis. This remarkable difference originates in the wide constitutional symptoms of the skin as an organ of sensorium and secretion; in the importance of its function as a covering for the bone to which it is attached, and, indeed, at best an affair of many months of suffering and sclerosis.
or leg be broken, is generally on the same side or on the back; the limb is to be supported on soft pillows, the condition of improvement in length the best degree possible to the patient's comfort, and as much as possible the relaxation of each class of muscles, especially the flexors; gentle friction, warm fomentations, or cold evaporating lotions are to be used according to the circumstances of the case and the feelings of the patient. Great care must be taken to have the limb firmly and closely bandaged (which may not be for some hours or days, the bone is to be restored as nearly as possible to its proper situation by the gentle application of force in any required direction. Violence would defeat its own object by reproducing spasm. One hand or an assistant should steady the upper portion of the limb while the lower portion is drawn down and turned till the proper length and bearings are restored. This process, which is called the reduction or setting of the fracture, cannot always be completed on the first attempt; and it may be necessary, after a lapse of time, to re-examine the case, and if the bone be sufficiently united, there will be no difficulty in restoring it to its normal position. The displacement may also return; and in oblique fracture this will certainly happen unless the case admits of a very fortunate adjustment of the bandages. The process we have described must then of course be repeated as often as circumstances may render it necessary. The setting of a broken limb is not, as people generally imagine, a piece of leggendarism, to be effected in a moment by some wonderful exertion of dexterity, and then to be announced in oracular phrase by the operator to a nameless dumb patient, and be explained by the man to understand. It is a perfectly simple and straightforward measure; and little more than common sense and a gentle hand are necessary for its proper execution, if it be possible to effect it at all.

When a bone is to be placed in splints, which are thin pieces of wood or other material of the requisite firmness and length, and suitably shaped and hollowed out to fit evenly without making undue pressure upon prominent points, such as the ankle. The skin is to be covered with a piece of linen, and the splints are put on, and firm and correctly adjusted to the parts, and any deviation from the correct line of the bone that may arise or become apparent as the swelling subsides.

Where there is no fear of the bone being displaced by the action of the muscles that are attached to it, or by restlessness of the patient, it is not necessary to apply splints, which are only useful in preventing motion, and otherwise rather retard the progress of the case by their pressure, and for other reasons.

In fracture of the ribs it is sufficient to apply a broad belt to prevent them from alternate depression and elevation in the act of breathing, which can be carried on sufficiently well by the diaphragm alone [Respiration]: and all such means are inapplicable in many cases, such as is the case in transverse fractures of the patella or knee-pan, and occasionally in those of the olecranon, or point of the elbow. When these are broken off by a sudden jerk of the muscles attached to them, the detached portion is sometimes distant, and the bone may be brought into sufficiently close apposition to unite by bone matter. But the ligamentous substance we have mentioned in speaking of ununited fracture is formed between the broken surfaces; and if proper care be taken not to permit it to be stretched any, it will miter, and its fibers will suture very much in those cases nearly as well as bone. When one patella has been broken in this way, the other is almost sure to follow soon after, having a double duty to perform in supporting the muscular contraction by means of the ligament, and also to prevent the bone being brought to a straight line with the leg in the erect posture.

Imperfect Fracture.—There are some conditions which modify the liability to the occurrence of fractures. Among these may be mentioned the soft and cartilaginous state of the bones in young infants before the earthy matter has been completely deposited. At this period it is not uncommon to find that although the limb is flexible at a certain point, no crepitation can be felt, and that in point of fact there is a perfect separation of the ends of the bone.

The opposite state of brittleness prevails in old age; and owing to this circumstance, a very slight accident will often cause a fracture of the neck of the thigh bone, the soft parts commonly breaking with the great and serious injury. In these instances ligamentous union is sometimes all that can be effected, and the limb remains for the remainder of life to a great degree crippled.

Fragilitas Ossium.—A still more brittle condition of the bones is sometimes co-existent with cancer and probably other morbid states of the constitution. It is called fragilitas ossium (fragility of the bones), and sometimes reaches a remarkable pitch. A latent tumor being the cause of the affection; the limb when the patient is almost an old man is so accounted to attend upon a lady in her pew at church, lie found she had broken her thigh in rising from her hassock; and in attempting to raise her, lie broke both her arms. There is generally
little injury of the soft parts in these fractures, and they are said to unite rather more quickly than others.

Some persons have asserted that the bones are more brittle in winter than in summer; but it does not require an hypothesis so improbable as this to explain the principal fact on which the proof has rested, namely, the more frequent occurrence of fractures in winter weather.

**FRAC TURE**, in mineralogy, means the irregular surface which appears when a mineral is broken, so that surfaces do not constitute a cleavage. The kinds of fracture are determined by the aspect and form of the surface presented by the mineral. Werner divides the varieties of fracture into compact, fibrous, radiated, and foliated. The compact may be splintery, even, conchoidal, uneven, earthy, or hackly. The fibrous may be coarse or delicate, straight or curved, parallel or diverging; and the diverging again is either conchoidal, or chalcedon. The radiated fracture is broad or narrow, straight or curved, diverging or concave; and streaked or smooth.

Other mineralogists do not employ so many descriptive terms as the above; thus, on looking through the description of minerals by Mr. Brookes, we find little else but the following varieties of fracture:—conchoidal, the conchoidal; earthy, fine earthy; foliated; granular; indistinct; splintery, coarse splintery, and uneven.

**FRAGARIA** [STRAWBERRY].

**RAISE** is a row of palisades placed in a horizontal or inclined position on the exterior of a rampart of earth in order to increase the difficulty of passing over it at the time of an assault.

**FRAMLINGHAM.** [SUFFOLK.]

FRANCE, the most westerly of the kingdoms of continental Europe with the exception of the Spanish Peninsula. Its form is very compact, and resembles an irregular polygon, the general contour and dimensions of which, with the latitude and longitude of the extreme points, are given in the subjoined diagram. From this it appears that it is comprehended between 42° 25' and 51° 3' N. lat.

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*The measurements are from the map of France by A. H. Druel, in four sheets, Paris, 1818.*

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and 8° 17' E. and 3° 3' 40' W. long.; that the aggregate length of the circumnavigating lines of the polygon is 2157 miles, of which 1188 miles are coast (929 miles on the ocean and 259 on the Mediterranean) and 969 miles of land frontier. If all the less important windings of the coast or of the frontier were followed, these numbers would of course be materially increased. The longest diagonal is from south-east to north-west (E to M on our diagram), about 660 miles; and the next longest from north-east to south-west (B to I), about 615 miles.

The area of France may be computed at 26,766 square geographical leagues of 25 to a degree (= 200,741 square English miles), including the island of Corsica, or Corsica, which, though by its geographical position and ancient political ties rather pertaining to Italy, is now incorporated with France, and forms one of its departments; or 26,271 square geographical leagues (= 200,925 square miles) exclusive of that island. The population, by the last census that of 1836, was 33,540,088 (164 to a square mile, inclusive of Corsica, or 33,333,019 (166 to a square mile) exclusive of that island. The number of inhabitants was greater than at the census last preceding, viz. that of 1831-2.
France, because it is the second European city in respect of population, being inferior only to London. The population of the metropolitan department of Seine, which comprehends Paris and its environs, numbered, in 1876, about 8,690,000, or nearly eight million all told, was 1,166,691.

Coast, Island, and Inlet; Exposed Coast. — The coast which faces the north-west (M to A in our diagram), 481 miles long, lies along the channel which separates England from France, and is the most exposed part of the coast about Fécamp and St. Valery. One of these subtidal bays receives the Somme, the other the Seine, at the mouth of which are two of these inlets, the principal bays of St. Malo, the second of those formed by the coast of the Manche, is a deep bay, the sides of which, facing respectively the English Channel, are broken, by the boundary with Mont St. Michel, in the Channel. The bays of the coast of St. Malo are rocky and much broken, especially on the west of St. Michel, by a multitude of small inlets with their intervening promontories. No important river appears on the coast, but many of the inlets are the estuaries of small streams. The remainder of the coast of the ocean faces the west and south-west, and extends 446 miles. At its north-western extremity (L to M in diagram) it is broken by a deep inlet, the submergence of which form the water of Brét and the bay of Les Sables (a small bay near the point of Mont St. Michel). The coast here is lofty and precipi-
tous. From the Bec du Raz (L) the coast runs facing the west-south-west, and continues for some time to present the same general features, as the adjacent part of the Channel coast—a broken outline, frequent inlets with intervening promontories, and continuous, but irregular, cliffs and precipi-
tous. As it proceeds to the south-east of the mouth of the Loire (which falls into the ocean mid-way between K and L), it becomes less broken in its configuration, low, and lined with features which resemble the Inlet of the Gironde (a little to the southward of the point K), from which the coast follows a line nearly direct, broken only by one small inlet, the bay or basin of Arcachon, and is skirted by sandy downs to the foot of the Pyrenees at (A), near which the coast assumes a rocky and precipitous character. This coast forms one side of that bay known familiarly to us as the bay of Biscay, but designated by the French the bay of Gascony.

The coast of the Mediterranean forms by its sinuosities the two great bays of Lions and Genoa, which are separated from each other by the projection of the coast about Toulon (F in diagram). The gulf of Lions (which, it may be ob-
served, derives its name not from the city of Lyon or Lyons, but from the lion-like violence of the tempests by which it was supposed to be agitated) is called the Lion's Mouth (because it is over rough, tempestuous, and destructive' and is characterized by the stags or lagoons by which its coast is skirted; it receives the waters of the Rhône. This part of the coast is commonly low, but towards the foot of the Pyrenees it is a boldcher character. The coast of the bay or gulf of Genoa, of which only a part belongs to France, is elevated and broken. It has many smaller inlets, as the harbour of Toulon, the road of Héres and that of Bormes, and the gulf of Cannes. It is one of the summits of the French coast belonging to France by geographical position, and connected with it by the language and origin of their population, are the Mediterranean bays of the Roman Empire, and form indeed the sole relic of the once extensive Norman or other French possessions of the early English kings: the Islands of Bréhat, les Sept Iles (the Seven Islands), and the Isle of Batz, are of minor importance. At the north-western extremity of the island of Batz there is a promontory of the kind which, and along the remainder of the coast of the ocean are the Isles of Glenan, Groix, Belle-Ile, Noirmoutier, Ile-Duc, Râ, Oleron, and others of less importance. In the Mediterranean we have the Islands of Hérès and Corse, or Corsica. All these are mentioned either in the older geographical articles, or under those of the departments to which they belong: Alderney, Bass, Belle-île, Charente Inferieure, Corse, Cotes du Nord, Finistere, Guernesey, Jersey, Morbihan, and Vendée.

The French Bays for the most part, formed by great natural barriers. On the southern or Spanish frontier are the Pyrenees, along the crests of which from the Mediterranean to the ocean (H to I in diagram) the line of demarcation runs. On the south-coast, the frontier towards the continental dominions of the king of Sardinia (from between C and D to E in diagram) is formed by the lofty ridges of the Alps; and that towards the Swiss Confederation (from C towards D) by the lower, but still considerable, Mont Blanc; the submersible heights of the Rhône (B to C) separates France from the domi-

Surface, geological character, hydrography. — The lo
est mountains in France are those on the Sardinian and Spanish frontiers, the Alps and Pyrenees, but the lofty ridges of the Alps, which, on or within the line of the frontier are of great elevation: as Mont Oiam, in the valley of Godernard, on the upper waters of the Drac, 13,519 feet; Pelvoux, 10,571; the village of Le Morgon near the village of the island of Oleron, in the valley of the Doubs, 1,492 feet; and the Gros Taureau, near Pontarier, 4,321. (Alps; Pyr

The Cévennes, of which the Montagnes Noires, or Black Mountains, of Languedoc and the mountains of the Garonne and of the Garrocs, are separated from the Pyrenees by a valley, through which the greater channel of Languedoc runs: they extend in a north-eastern direction, and after sending off branches to join the group of primitive and basaltic mountains of Auvergne, turn to the northward and skirt the valley of the Rhône and the Saône: in this part of their course they are known (accord-
ing to the districts through which they pass) as the heights of Vivarais, Forez, Lyonne, Beaujolais, or Chaballos. Mont Mezen, the highest of Cévennes, is 8,802 feet high, and Mont Gerberi de Jonche, another summit, 7,497 feet; the mountains of Auvergne rather surpass these in height: Le Pic de Sancy, the summit of Mont d'Or, is 6,224 feet high, Le Puy Ferrand is 6,116 feet, and Le Pion of Cantal is nearly as high. There are several other "Puy's" or volca-

calpe. The comparatively humble slopes of the Côte d'Or of Bourgogne (Burgundy) may be regarded as a continuation of the Chartallois heights, and serve with the heights of Langres to connect the Cévennes with the Vosges. These branches extend in a southerly direction to unite with the Jura, and whose wild and wooded steeps form the western boundary of the valley of the Rhône. The principal sum-

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by the heights of Beavice and those of Langres with' their
connecting range and by the hills which branch off from
the heights of Langres toward the Channel. The length uf
the Seine is given by Malte Brun at 470 miles that of its
The basin of
principal tributary, the Marne, is 2C8 miles.
the Somme is bounded by the heights that run from those
of Langres to the coast of the Channel ; the length of the
river is about
0 miles.

From

the heights of Langres a ratine of high lands extends
north-west direction to the coast of La Manche, about
Ope Gris Ncz. separating the streams which belong to the
great system of the Rhine from those which belong to the
branch from these
river systems of central France.
heights divides the basins of the Seine and the Somme.
From the Charollois heights a range of hills of gradually
diminishing elevation extends to the neighbourhood of the
Loire, separates that river from the sti earns which How into
the Seine, and connects the mountain system of Central
Fiance with the heights ofBeauce, which are a prolongation
These run from the
of the Menez mountains of Brelagne.
headlands near Brest in an eastward direction. A range
which proceeds in a north-west direction from the central
group of the Auvcrgnat mountains toward the mouth of the
Loire, called the heights of Gatine, separates the basin of
tin: Loire from that of the Garonne; and another range,
which branches off from the Pyrenees near the Pic du Midi,
and runs north-west till it subsides in the Landes (heaths)
of IJordeaux, separates the basins of the Garonne and the
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The COvcnncs, the heights of Langres and the range
proceeding from the latter to the coast of the Channel, tepai ate the western or oceanic slope (rerxa/it Occanitjue of
the latter is subdivided
Mulle Brun) from the eastern
by the heights which connect those of Langres with the
Vosges and by those branches of the Vosges which unite
with the Jura, into the north-eastern or Rhenish slope
tenant Rhenan), and the south-eastern or Mediterranean
slope (tenant Mediterraneen).
The western slope includes the basins of the Adour, the
Garonne, the Charente, the Loire, the Vilaine, the Orne,
the Seine, the Sotnme, and a number of others of less ini'
portance. The basin of the Adour is bounded by the
Pyrenees and the range which extends from these to the
mouth of the Garonne the length of this river is about 194
miles.
The basin of the Garonne is bounded by the heights
last mentioned, by the Pyrenees, the Cevennes, the mountain group of Auvergne, the heights of Gatine, and a small
brunch from these which divides the basins of the Garonne
and Charente. The general course of the Garonne is to
the north-west; that of its principal tributaries which How
from the Cevennes and the Auvcrgnat group (as the
Dordogne, the Lot, and the Tarn) is to the west; that of
the Pyrenean tributaries, which are smaller, to the north
the Dordogne is the last tributary of importance which it
receives in its course to the ocean; and their joint .Tstuary
is called the Gironde, a name which like that of our own
II umber applies to the icsluary alone.
The basn of the
Garonne is inferior in extent to that of the Lone, but exceeds that of the Seine in the proportion of 7 to (>.
The
length of the principal streams of the system of the Gar:i:ne
is thus given by Malte Brun
the Garonne itself .',<>{> miles,
the Dordogne 293 miles, the Lot Ififi miles and the Tarn
2u7 miles. The basin of the Charente is bounded by the
heights of Gatine or their branches, and the length of the
river is 235 miles or thereabout.
The ba-in of the Loire,
the largest river that wholly belongs to France, is bounded
by the heights of Gatine, the Auvcignat group, the Cevennes in which it rises, the Charollois heights, the heights
w hich connect these w ith the heights of Beauce, the heights
of Beauce, and the Menez mountains of Bretagne. The
direction of a line drawn from the source of the Loire to its
mouth would be north-west, and it would lie nearly along
the ridge of the heights of Gatine, but from the great bend
which the river makes, its course is first north and then
west
its principal tributary, the Allier, has a northward
course nearly parallel to and not far distant from the upper
part of the Loire: the Cher, the lndre, and the Vienue,
have a north-west course. These all join the Loire on the
left bank; the most important tributary which it receives
on the right bank is the Maycnne. The length of the Loire
is given by Malte Brun at above
duo miles; that of the
Allier at about 2jl>; that of the Cher, 21 j: that of the
Yienne, 2l»7 and that of the Creuse, an allluent of the
Yicune. I(>6 miles. The basin of the Vilaine is bounded on
the north by the Menez mountains, and on the east by a
hi unci) of the same mountains which separates the basin of
ilic Yilaiucfrom the basin of the Loire
the length of the Viin;- is about 124 miles.
The basin of the Orne is bounded
by i!« Menez mountains, or their blanches; the length of the
river is above b2 miles.
The basin of the Seine is bounded

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The basin of the Rhone is bounded b>
to require notice.
the Cevennes, the heights of Charollois, the O'ito d Or. iLc
heights of Langres, the Vosges, the Jura, and the Airs: r.s
greatest extension is f r oin north to south, and it is comprehended partly in Switzerland and the Sardinian states, but
The course of the Rhone in Savoy,
chiefly in Fiance.
Svv it/.erland, and part of France is nearly west at the great
its whole course .»
city of Lyon it bends to the southward
about j2 j miles that of the Sadne, its principal attluent, is
304 miles: that of the 1-ere and the Durance, two oilier
atlliients, about 190 and 220 respectively; and that of the
Doubs a feeder of the Saone, about 2 j0.
General Gcnlngical Character.-- Of the geology of
France our limits and our materials restrict us to a gi-nerjl
The sands, clays, limestones of laicr
and rapid sketch.
formation, marls, and sandstones, which constitute the
strata above the chalk (including the alluvial and dduvia'.
beds), and may be designated the super-cretaceous group,'
occupy several extensive districts. 1. The largest of ihcsc
districts is in the south-west of France; it extends frnm
a lino drawn along the foot of the Pyrenees from ihi
ocean to the Mediterranean, northward to a line drawn
from the mouth of the Gironde below Blaye to the Eian::
It comprehends nearly tho
de Sigi'an, near Narbonnc.
whole of the valleys of the Adour and the Garonne, with
the intervening landes,' or heaths; the lower part of the
valleys of the Dordogne, the Lot, the Tarn, the Arnegc,
and the other streams which join the Garonne on the ripn
bank the whole of the valleys of those streams which j. in
it on the left bank, except such as have their sources in the
higher part of the Pyrenees and a narrow belt from the
valley of the Garonne to the Mediterranean, along the coa>i
of which, beds of this formation, probably alluvial, extend
to '.lie border of Spain.
2. The next district in extent is
what is designated the Paris basin,' extending for seven.l
miles in every direction round that ciry, bounded bj'u
irregular line drawn from the neighbourhood of Gisors, ui
the nortli-vvest of Paris, to La Fere on the Oise : from
thence to the neighbourhood of Epernay on the Marr-e;
from Epernay to the Seine, at the junction of the Low::,
and along the valley through which the canals of the Loir.,'
and of Briare have been cut, to the valley of the Loir
along which valley these formations extend upwards lo
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north-eastern or Rhenish slope comprehends part? t-f
the basins of the Kscaut or Schelde, the Mouse or Maes, the
Moselle, and the Rhine. Only a comparatively small part
of the course of each of these rivers belongs to France : «•>
part of the course of the Rhine is indeed included in th^t
country, of which it only forms the boundary.
The Mediterranean slope comprehends the basin of ih.i
Rhone, and of one or two other streams, which arc too sina'.l

The

Adour.

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Cosiie,

and downwards below Blois: from this

last

point

they are bounded by a line drawn northward to the neighbourhood of Gisors. 3. The third district extends alor:,,
the valley of the Saone on the cast side of that river fruit)
the junction of the Doubs to Lyon, and then along the east
side of the valley of the Rhone to below (he junction of the
Drome: this long strip has a breadth of several miles en
the cast side of the Saone and Rhone, but does not exienJ
to the west of those rivers, except between the junction ef
the Doubs and the Canal du Centre with the Saone. 4. The
next district comprehends the alluvial formation of tha
delta of the Rhone, and the lower part of the valley of that
river, and of its tributaries the Aigues.Ouveze, aud Dura mi'.
5. C, 7.
There are three other narrow portions occupied by
these later formations, extending along that pait of the valley of the Rhine which belongs to France; along ihe tal:. v
of the Allier, from near Brioude to below Moulin*, an
along the valley of the Loire from near Fours to the j;oi< tion of the Avron.
S. That small part of France which
is
to the north of a Hue drawn from Calais by St. Omer \<>
the Belgian frontier, is occupied by those formations which
extend into Belgium, and occupy a large part of that
countrv.
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The chalk formation skirts the district occupied by the super-cretaceous group on the north-east side along, extending from the coast between the Gironde and the Cha- 
rente to the river Lot, southward of which it is not found:  
the breadth of this belt of chalk is tolerably uniform; about 
24 miles, or 39 kilometers; but it is narrower on the other 
side by the chalk which forms a circular belt of very 
variable breadth, from 24 or 25 miles (from Reims to 
Rethal), to more than 100 (from Clermont, near the Oise, to 
the coast near Calais); the continuity of this belt is only 
interrupted by the extensions of the super-cretaceous strata 
up the valley of the Loire toward Cosne. The chalk form-
uation occupies the coast of the Channel from Cape Grisane, 
a little to the south-west of Calais, to the west of the mouth 
of the Seine, except near Boulogne, where it is inter-
rupted by the continuation of the limestone belt of the 
intermediate cretaceous district. From below to above, 
the breadth of this chalk belt is not more than 89 miles, 
which, here rise to the surface. This chalk formation 
is opposite to that of the south-east of England (Kent and 
Sussex), a section of which occupies part of the sea-
coast of these two counties. 
The group which comprehends the olitic and other for-
mations, from the chalk marl (which underlies the chalk) 
to the lias, surrounds the chalk belt of the Paris basin on 
the west, south, and east sides. On the west side the 
district occupied by these formations is narrow, except just 
on the other side of the Seine, where the best pipes of chalk are 
found near the mouth of the Seine to the peninsula of Cotentin. 
On the south-west it becomes wider, and extends to the chalk 
belt which bounds on the north-east the 1st super-creta-
ceous district; along this belt it extends, forming an outer 
belt from the Seine and the Loire to the south, and the 
upper waters of the Saône, and across that river to the 
Jura, the heights of which consist of these formations. 
From the Sabo and the Jura these formations extend 
southward to the Mediterranean, bounding the 3rd 
super-cretaceous district, and here the oldest and the latest 
formations may be found in juxtaposition, without the intervention of any of the 
intermediate strata. 

The whole of Bretagne and the adjacent part of 
Normandie, and the other conterminous provinces, 
form a part of the district, and in part of the 
Cévennes, the hills of Vivarais, Forez, and the Charolais, and a 
large extent of country west of Auvergne, as far as the banks 
of the Vienne and the sources of the Charente: this district is 
bounded on the north-west by the 6th and 7th super-creta-
ceous districts; here the oldest and the latest formations may be found in 
juxtaposition, without the intervention of any of the 
intermediate strata. 

The Alpes. 4. The Pyrenees, in which 
calcareous formations abound, and organic remains are found 
some distance from the surface; in the district of the 
Rhône and the districts of the Cévennes, by the new red sandstone or magnesian 
limestone, by which formations the primitive district is nearly 
surrounded. 

A considerable insulated district in the southern part of 
the Cévennes, between districts 2 and 4. 

A small tract in the north of the Cévennes, between districts 1 and 20, consists 
of the super-cretaceous district of the Cévennes, and of the 
innumerable different veins of calcareous rock, of which more than one hundred and fifty are collected in 
basins for the reception of patients; the others are 
taken internally, and are frequently, the greater part by visitors from 
a distance, the others by persons in the neighbourhood.
We give the table from the last edition of Malte Brun’s Geographie Universelle, substituting Fahrenheit’s scale for the old.

Agriculture.—France has always been considered one of the most agricultural countries in Europe; and if the husbandry of France is not superior to that of other countries, it is not for want of writings on this important subject. The French and English have collected all the information which has been handed down from the antients, or which experience has taught the moderns. But this has had little influence on the practice of the great mass of the cultivators of the soil, who are too much taken up with reading books, and who, if they could read them, would seldom adopt methods not sanctioned by the usage of their forefathers. The want of ready communication by roads and canals must ever prevent any great exertions being made to increase the produce of the land, and the improvement of the neighbourhood. One part of France has often had a deficiency of corn approaching to a famine, when plenty reigned in another. Even now (1837) the price of grain in the south of France varies so much from that in the north, that there is a difference in the duty paid on the importation of foreign corn in different ports; whereas in Great Britain the price is brought so nearly to a level everywhere, that the only difference arises from the expense of carriage by water, which is always considerable.

The cultivation from north to south, and from east to west, the traveller, who expects to find an improved state of agriculture, is much disappointed. Arthur Young, in his tour through France in 1787, was surprised to find the state of cultivation so low in every province, except those between the Seine and its branches. His observations have been acknowledged to be just by the French agricultural writers themselves, and a certain spirit of improvement has been excited by his remarks. Since the Revolution in 1793, every encouragement to agriculture has been held out by the government, and the establishment of the excellent publications which have been produced, and the establishment of agricultural schools, and model farms, the progress towards a more general adoption of improved methods of cultivation is very slow. In most parts of France the art of cultivating the land is almost confined to the towns and the districts which he cultivates is dispersed over a considerable extent of distant uncultivated fields. He loses much time in going and returning, and he has a great way to carry the little manure which he makes. Although the use of manure is fully appreciated, there is little knowledge of the means by which it may be increased. Artificial grasses are cultivated to a considerable extent, especially in the southern provinces, but not sufficiently to maintain such stock as would render the pasture a suitable quantity of nourishment; and the very small demand for animal food, in most of the large towns, gives little encouragement to the feeding and fattening of cattle, except where natural meadows abound, which is only along the course of the rivers, and in the provinces of Brittany.

The great division of property which arises from the law of equal distribution among all the children at the death of the parent, tends much to lessen the size of farms. In a country where there are domestic manufactures to give employment to the labourers on the soil, when its plot of ground does not require all his time, a more careful cultivation is the consequence of small occupations. Habits of constant employment excite industry; and the ingenuity is sharpened by the practice of the mechanical arts. But in an ignoble calling, where production is not the object, and if a sufficiency of food can be procured from a small possession, for which no rent is paid, it is seldom that a great surplus is raised.

The proportion of the population of France, which is occupied in agriculture, is much greater than in those countries where the inhabitants are chiefly engaged in manufactures and commerce; and yet the inhabitants of the latter are in general better fed not in consequence of the importation of grain, but of a better cultivation of the soil, as is the case in Holland. France imports much corn, it exports its return butter, cheese, and pork, and its wool, hemp, and flax. Great Britain and Ireland have required little assistance from foreign countries of late years, although the population has greatly increased.

There are in France very few large proprietors of land, but, like the English country gentleman, spend a great part of their time in the country, and take an interest in agricultural pursuits. There are not many speculative farmers who have capital, and are possessed of a superficial practical, as well as a theoretical knowledge of agriculture, and who make it a means of acquiring wealth. Few expensive instruments can consequently ever be tried, or brought into general use, nor any extensive improvements undertaken. All that the French have done in preventing a rapid improvement in French agriculture.

The northern part of France, on the confines of Belgium, and in the immediate neighbourhood of Paris, are the best cultivated. In most other parts, except where the maize is cut early, the old system of two or three crops of corn, and a fallow, is generally adopted. If the rows were well worked and clean, the crops would be better; but this is by no means the case. The variegated appearance of the corn in May, from the abundant growth of weeds, is perhaps the most objectionable circumstance. There the appearance of the corn, when they appear likely to choke the corn, they are sometimes weeded out; but as the method of sowing the seed in rows or drills with an instrument is unknown or undervalued, there is no possibility of hoewing the intervals between the growing plants, and all the weeding must be effected with the hand.

The best account we have in English of the state of French agriculture is contained in the journal published by Arthur Young, of his journeys through France in 1787-8; and although he was in France only six months during the Revolution, since the Revolution of 1793, and several Englishmen have purchased farms in various parts of France, where they have introduced a better husbandry, the present state is not very different from what Arthur Young represents it to be. The區、may, and the general state of the whole of France into four distinct climates as regards agriculture. In the northern the vine does not thrive so as to make good wine. This district lies north-west of a line which passes near Paris, and is parallel to the line of the division of France into four regions, that is, in a direction nearly east-north-east and west-south-west, so that it advances more to the north on the eastern part, and less on the western. The next division is that in which wine is made, but the maize or Indian corn does not thrive. The last three divisions are more or less similar to the first division, with different climates and crops. The western farms have the whole of France into four districts as regards agriculture. In the northern the vine does not thrive so as to make good wine. This district lies north-west of a line which passes near Paris, and is parallel to the line of the division of France into four regions, that is, in a direction nearly east-north-east and west-south-west, so that it advances more to the north on the eastern part, and less on the western. The next division is that in which wine is made, but the maize or Indian corn does not thrive. The last three divisions are more or less similar to the first division, with different climates and crops. The western farms have the

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<td>Wheat</td>
<td>87,000,000</td>
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<td>9,000,000</td>
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The whole surface of France is at 131 millions of acres, of which 70 are worked by the plough, 27 are used up by vineyards, 20 covered with wood, 4 in meadows, and 23 pastures (of which may be added to the arable parts), and 27 in wastes, heaths, and poor pastures. These quantities were only an approximation; but they serve to show the small proportion of permanent ground on which France, the greater part of which is in Normandy and Brittany.

The arable land of France is now estimated at 23,000,000 of hectares, which (taking the hectare = 2.47 acres nearly) are about equal to 56,516,000 English measure. The yearly agricultural produce of France is given by Malte Brun as follows:

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We have given the equivalent quantities in English measures in round numbers (taking the quarter = 291 hectolitres nearly).

The quantity of grain produced in France now, very little exceeds what was grown fifty years since, although the population has advanced in the interval from 25,000,000 to 40,000,000. Oats are the principal article of artificial grasses, of pulse, and, above all, of young ears, which are however much increased. Beet-root is extensively grown for the manufacture of sugar. The esculent roots and table vegetables are common. Flax and hemp are cultivated in various parts of the country, and, to a considerable extent, the hop, tobacco, and madder, in a small degree; and the colza, or rape, for oil, is grown in the north. The industry of the peasants in some of the more sterile districts is very great: in the Cévennes and in Auvergne they build walls to retain all the rains that fall, and plough up the hills down by the mountain streams, and cultivate the sides of the mountains by means of the terraces thus formed.

In the south the soil of the hills is stony, which suits the vine, but is unfit for the growth of corn; between the hills there are valleys which abound in every kind of produce; and where there is a command of water to irrigate the fields the most productive water-meadows may be made. But there are many spots quite unproductive for want of improvement. Wherever the maize is cultivated, it is sown either in a non-workable seed, which is such that it cannot fail to exhaust the soil, however good it may have been at first; for maize returns little to the ground in the way of manure, and the straw of the wheat is not sufficient for that purpose. The French-bean is likewise cultivated for the bone-white or camelots, as they are called, to retain nutritive matter than any other seed, in the same compass. These crops cannot be raised to any extent without much manure; and the number of cattle kept is not sufficient to produce an adequate supply of it. The arable land and pasture in the neighboring districts is usually really wide of each other. The horses and cows are oft chiefly on clover, lucern, saintoin, and other artificial grasses, of which no greater extent is raised than is absolutely necessary. The keeping of more heaths than are immediately required for the plough in France, or the clearing of the moorlands, is a thing of which the generality of French peasants have no idea, at least in the central part of France. The consequence appears in the average produce of land which has every advantage of soil and climate. The increase of five or six measures of wheat for every measure sown is the full average of production; of barley and oats it may be somewhat more. The mode of valuing a crop by a comparison with the quantity sown is very fallacious: the produce per acre is a better criterion of the goodness of the soil, or the skill of the farmer; while the quantity sown is a mere fact, more seed is sown than would be necessary with better tillage and manuring. In France the produce of an acre of wheat on good land may be averaged at 15 to 20 bushels, of barley 20 to 25, and of oats 25 to 30, or about one-third less. The English acre is also about half than the half of the produce good land in Scotland, where the climate is much inferior. This is owing to the imperfect manner in which in the land is usually worked, cleaned, and manured, and particularly to the deficiency of cattle. In the departments of France, where they have the example of Flemish industry, a better system is adopted: but it is astonishing to see the rapid decrease of good cultivation in travelling from Lille to Paris, and still more from Paris to Dijon and the Jura.

The refuse crops in use in France are few, and not of an improved kind. Each province has its own fashion in making ploughs, most of which are rude and do their work imperfectly. A plough, called a binot, with a double mouldboard, is used in several districts, and is useful in stirring follows; but when no other plough is used the whole soil is not moved, but the land is merely scored, and the roots of perennial weeds are not destroyed. The heavy turn wrest plough is used in other districts, chiefly in the northern part, and in heavy soils. The hack, or heavy hoe, is also extensively used in the maritime provinces of the north, and in part of the central France; the plough being cut off a smaller size, the land is much more cultivated: the ground is ploughed in rough ridges, and pulverised by means of the hack: both men and women labour with this instrument; they go in rows, each taking a furrow, and digging up the earth turned over by the plough, reduce it to a proper degree of fineness. If this were well done, and the plough had gone deep, it would be an excellent cultivation, but the soil is only stirred four or five inches deep, and the weeds are not exterminated. In the north, the horset is used to a better purpose than a man stands, while it is drawn over the land by a horse or ox: this levels the surface and covers the seed. The corn is reaped with the sickle, chiefly by women. In the northern parts the barns are very large, to hold the whole crop; and the farm yard is used as an threshing barn. Dijon is the principal town for this kind of husbandry. In the south the corn is thrashed out in the field, and put into granaries immediately after harvest. The size of farms in France is much less than the average of English farms; and the multitude of small occupations, by which a family is both cultivated and supported, is the great difference.

Model farms and establishments for the diffusion of agricultural knowledge have been established in various parts of France. That of Roville, under M. de Dombasle, has been long celebrated by the publication of the 'Annales de Roville.' A Government has been founded near Bordeaux, the establishment supported by the government; and in several of the provinces similar establishments have been founded of late years. They cannot fail gradually to introduce improved methods of cultivation, and to bring France to its proper place amongst agricultural nations.

The vine is one of the most important objects of cultivation in France. In 10 of the 86 departments it is not grown for the purpose of making wine, or at all upon a considerable produce. A wine of much less or more an object of attention. The amount of land occupied by the vines is increased at rather more than 2,000,000 of hectares, or 5,000,000 of English acres. The average annual produce of the French vineyards is estimated at 42,000,000, or 45,000,000 gallons of alcohol, and about one-sixth is converted into brandy. The former produces wines of Champagne, Bourgogne (Burgundy), Lyonnais, Dauphiné, and the Bordelais, from which last district the claret comes, the finest productions. The banks of the Charente and the Gironde are more celebrated for brandy; in which, the farms of the Cognac, the wines of Languedoc, Provence, and Roussillon are remarkable for fulness of body; but they want the fine odour (bouquet) of the first class of wines. The annual produce of the vineyards is estimated at 720,000,000 gallons: 250,000,000 gallons of claret and red wines are exported, and 150,000,000 of other wines. The rest is consumed in the country. In the departments of the north and north-west, which do not produce the vine, cider forms the usual drink of the poorer classes.

Of the fruits which are cultivated in any considerable scale in France, the mulberry is one of the most important: it is reared for the nourishment of the silk-worm. This branch of culture has much increased of late years. The olive, the orange, the lemon, the pistachio, are grown along the Mediterranean coast, and in the department of the Pyrenees, in parts of the Languedoc, and the basin of the Garonne; but they are not abundant, and are inferior to those of other lands: the plum when dried furnishes a considerable article of export. The apple and the pear are grown in Normandie and Bretagne for making cider and perry, which furnish the peasantry with their common drink: the citrus fruits are also cultivated; the latter are more extensively cultivated than the former. France is the best (viz., the Cognac) brandy. The wines of Languedoc, Provence, and Roussillon are remarkable for fulness of body; but they want the fine odour (bouquet) of the first class of wines. The annual produce of the vineyards is estimated at 720,000,000 gallons: 250,000,000 gallons of claret and red wines are exported, and 150,000,000 of other wines. The rest is consumed in the country. In the departments of the north and north-west, which do not produce the vine, cider forms the usual drink of the poorer classes.

Of the forests which are cultivated in the departments of the south-west, the elm, the ash, the beech, the birch, the poplar (white and black), the larch, the juniper, the wild cherry, and the pine. The box, the cornel, the maple, and others furnish the cabinet-maker with ornamental wood. The eastern part of central France is the best (viz., the Jura) district, and the former province of Bretagne is the most destitute of wood. As in France wood is almost universally used for fuel, it is an object of considerable attention; and it is calculated that about one-seventh of the whole country is occupied as wood-land. The principal forests are on the various mountain ranges: except on the Alps and Pyrenees, which are rather bare of wood. The ranges of the Jura and the Voges furnish good deals, which are often substituted for those of the northern countries of Europe; and the forests of the Maritime Alps and the departments of the Lozère and Aveyron, situated near the borders of Spain and Portugal, are the best of these. The work of the forest is done by two sorts of men: one is the woodman, the other the lumberman, who cut the trees and husk them, between the Garonne and the Adour, to turn that else barren tract to some account: these forests yield charcoal, coal, wood, and pitch.

Animals.—The domesticated animals of France are, for the most part, similar to those of Great Britain.

Horses in France are by no means equal either in numbers...
ber or in excellence to what they might be under a better system of agriculture. A considerable number are imported annually: although the richness of the soil should rather enable the natives to export. Considerable praise has been taken by the established stock and by other means to improve and increase the breed. The horses of the departments of the north and north-east, Somme, Pas de Calais, Ardenne, Haut Rhin, and Bas Rhin are well adapted for war, posting, and agricultural purposes. The whole number of these horses is excellent for the saddle or the carriage; those of the departments of Maine et Loire, and Sarthe, and the departments adjacent to the mountain-chains of the Alps and the Jura, are adapted for the light cavalry: the white waggoner of the former variety is known as the Limousin breed, and those of the former Guiene, Gasogone, and Beam realed Navarretts, are in the highest repute for the combination of lightness and strength. The horses of Corsica and Bretagne are a rough hardy breed. The ass, is inferior to that of Great Britain, is, except in the department of Vienne, far inferior to the ass of Spain or Italy. Mules are bred in many parts, and some of them are exported. Oxen in France are much employed in the labour of the field instead of horses: they are of five or 6 different breeds: among the largest are those of the departments of Seine et Marne, Aisne, Haut Rhin, Pas de Calais, Charente Inferieure, Deux Sèvres, Lot et Garonne, and Gironde: among the smallest are those of Brittany, Ardenne, and the extremes of the Alps, Pyrenees, Cévennes, and Corse. Oxen are frequently heeled in one part of the country and fattened in another part. The rich plains of Lower Normandy afford pasture to great numbers of oxen which are brought thither for fattening. Especially in the west of the department of central France where they are bred. The sheep are of various breeds, some of which have been so far improved as to furnish a wool equal to that of Saxony. The number of sheep in proportion to the population is by no means equal in France to that of England: the former is in the provinces of the former province of Berri, Bourbonnais, Normandie, Picardie, H de France, Oréoncois, Romerique in Guiane, and part of Languedoc. The sheep of Poitou and Picardie, and some parts of Normandie, the Ile de France, and Charente Inferieure, are the thickest; those of Ardenne are most esteemed for their wool: but the best on the whole are those reared on the sandy districts near the sea. The sheep of Roussillon approach nearest to the Merinos in the fineness of their fleece. Some goats are reared in the mountains of the departments of Provence, districts of Auvence, the Cévennes, the Vosges, and the heights which connect these two chains, in the Pyrenees, The Alps, in the Lcpuds of Guienne and Gasogone, and esp. in the Vosges. Thibet goats imported into the Cevennes have been naturalized in the Pyrenees. The swine are of three races: the original breed, which existed in the time of the Celts, and which is still found in Normandie, especially in the valley of Ange; the Polish breed, and that of Perigord: from the crossing of these breeds a number of varieties have resulted. The trade in salt provisions forms an important branch of industry in the department of Basse Pyrénées (where the Bayonne hams are cured), and in the frontier departments of the east and north-east. The number of horses of France is estimated at 2,500,000. The number of oxen in 1839 was ascertained to be 7,130,632: they were most numerous in the departments of the north-west, comprehending the west of the depart. of Normandie, and the whole of Anjou and Touraine. The number of as at the same period was 28,130,231, and of geese 1,269,063. The rearing of poultry is in some parts much attended to. The cork and hemp of the peninsula of Caux constitute a peculiar race, which are fattened in the environs of Bar, Calvados, and the department of Marais. Bees, especially those of the Abbaye of St. Cuval, are reared in the former provinces of Languedoc and Alseric, and in several places in the west of France: and the duck in Lower Normandie and Languedoc. By a peculiar mode of treatment the liver and the duck and goose are rendered very large and very delicate. The duck-liver pies of Strasburg is known to connoisseurs. Of wild animals there are some which are not found in England. The black and brown bear have their haunts in the Pyrenees: the lynx is found, though very rarely, in the woods of the higher Alps: and the wild boar are common in the forests of any extent. The chamois and the wild goat are found on the summits of the Alps and Pyrenees. The stag, the roebuck, so scarce at home, is abundant among the woods and the banks of the rivers, and on the summits of the higher Alps. The smaller beasts of prey and vermin, such as the fox, the badger, the hedgehog, the polecat, the weasel, the rat of which the original black species has been, as with us, exterminated and replaced by the innoxious, a descendant of the former black one, the mode of life and the field-mouse are sufficiently numerous in their respective haunts. Among the amphibious animals are the otter and the water-rat; the beaver is occasionally found on the banks of the Rhone [Beaver, p. 124]: and the ‘desman’ an animal not yet known, is sometimes seen in the neighbourhood of Turly. Of birds the chief songsters and the birds of passage are much the same as in England, with the addition of the hoopoe and one or two others. The gulls of the coast are found on the shores of the Mediterranean. Of game, there are the red partridge, common in the departments of the centre and west, and the grey partridge, common in the south; the quail, the ortolan, the beccaliee, the pheasant, the woodcock, abundant in Poërdie, and those of the Rhine and Moselle; and the partridge in the department of the Channel. The teal and others are taken in great numbers on the coasts of the Channel and the Ocean, especially in the department of Charente Inferieure. Of other animals we mention only a few: the geese of Martinique are found on the Mediterranean coast. There are several species of vipers and of harmless snakes: the latter are in some places regarded as fit for food. Frets are numerous and of many species: one, the prickly fox (ceropaus eques), is of great size and harmless form. Many of the sea-fishes are caught by the kind of spider closely resembling the tartaruma of Italy, are found. The bee and the silk-worm are the most valuable insects; and the Spanish fly is sufficiently numerous to furnish an article of exportation. The oyster. The oysters abound in fish of various kinds, the taking of which occupies a number of hands: the herring, the mackerel, and especially the sardine or pilchard, are the chief objects of attention to the fishermen of the coast. The pilot whale and the common pilot whale are caught abundantly; and are consumed to a considerable extent. Administrative divisions, Civil, Military, Judicial, Ecclesiastical. The present civil division of France is into 89 departments. The departments are under the government of a prefect, and are subdivided into circuits or arrondissements, each comprising a certain number of communes which for their extent and average population may be compared with our parishes. [Departments. This is an important section, but it is not clear how it relates to the previous text.]. The name of the department is usually borne from some marked natural feature, a river, a chain of mountains, &c.: the name of the arrondissement is invariably taken from its chief town. As the divisions military and administrative were formed at the same time, all the divisions which existed before the introduction of the present departments are continually referred to, though no longer officially recognised, it is desirable to give them in a tabular form, together with the departments which correspond to them.
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<th>Military Governor-</th>
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<tbody>
<tr>
<td>1. LA FLAMME FRANÇAISE (Lille). La Flamme Maritime, La Flamme Wallonne, Le Cambrésis, Le Hautain Franch.</td>
<td></td>
</tr>
<tr>
<td>2. PAS DE CALAIS, 664,654.</td>
<td></td>
</tr>
<tr>
<td>3. SOMME, 552,706.</td>
<td></td>
</tr>
<tr>
<td>4. SHIRE INFEIRIEURE, 740,225.</td>
<td></td>
</tr>
<tr>
<td>5. EURE, 424,762.</td>
<td></td>
</tr>
<tr>
<td>6. CALVADOS, 501,775.</td>
<td></td>
</tr>
<tr>
<td>7. MANCHE, 594,382.</td>
<td></td>
</tr>
<tr>
<td>8. ORNE, 443,688.</td>
<td></td>
</tr>
<tr>
<td>9. AISNE, 527,095.</td>
<td></td>
</tr>
<tr>
<td>10. OISE, 396,438.</td>
<td></td>
</tr>
<tr>
<td>11. SHIRE, 1,106,691.</td>
<td></td>
</tr>
<tr>
<td>12. SHIRE ET OISE, 449,592.</td>
<td></td>
</tr>
<tr>
<td>13. SHIRE ET MARNE, 325,881.</td>
<td></td>
</tr>
<tr>
<td>14. MARNE, 345,245.</td>
<td></td>
</tr>
<tr>
<td>16. AUBE, 253,870.</td>
<td></td>
</tr>
<tr>
<td>17. HAUTE MARNE, 255,969.</td>
<td></td>
</tr>
<tr>
<td>18. MEUSE, 317,701.</td>
<td></td>
</tr>
<tr>
<td>20. MEURTHE, 424,365.</td>
<td></td>
</tr>
<tr>
<td>21. VOSGES, 411,034.</td>
<td></td>
</tr>
<tr>
<td>22. EURÉ ET LOIR, 285,058.</td>
<td></td>
</tr>
<tr>
<td>23. LOIRET, 316,189.</td>
<td></td>
</tr>
<tr>
<td>25. INDE ET LOIRE, 304,271.</td>
<td></td>
</tr>
</tbody>
</table>

**FRANCE**

**Departments, with the population,** 1836.

<table>
<thead>
<tr>
<th>Departement</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORD, 1,026,417.</td>
<td></td>
</tr>
<tr>
<td>LILLE, 72,005.</td>
<td></td>
</tr>
<tr>
<td>Douai, 23,808.</td>
<td></td>
</tr>
<tr>
<td>Valenciennes, 19,499.</td>
<td></td>
</tr>
<tr>
<td>Douai, 19,173.</td>
<td></td>
</tr>
<tr>
<td>Cambrai, 17,916.</td>
<td></td>
</tr>
<tr>
<td>Hazebrouck, 7,656.</td>
<td></td>
</tr>
<tr>
<td>Avesnes, 3,083.</td>
<td></td>
</tr>
<tr>
<td>Arras, 23,485.</td>
<td></td>
</tr>
<tr>
<td>Boulogne, 25,732.</td>
<td></td>
</tr>
<tr>
<td>St. Omer, 19,032.</td>
<td></td>
</tr>
<tr>
<td>Béthune, 6,903.</td>
<td></td>
</tr>
<tr>
<td>Montreuil, 3,687.</td>
<td></td>
</tr>
<tr>
<td>St. Pol, 3,421.</td>
<td></td>
</tr>
<tr>
<td>Calais, 46,129.</td>
<td></td>
</tr>
<tr>
<td>Abbeville, 18,247.</td>
<td></td>
</tr>
<tr>
<td>Péronne, 4119.</td>
<td></td>
</tr>
<tr>
<td>Montdidier, 3790.</td>
<td></td>
</tr>
<tr>
<td>Doullens, 3912.</td>
<td></td>
</tr>
</tbody>
</table>

**Capitale Department (in Capitals)—Chief towns of Arrondissements (in Italics), with the population of their respective communes in 1836, and other places of importance.**

<table>
<thead>
<tr>
<th>Department</th>
<th>Chief Town</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>LILLE</td>
<td>Lille</td>
<td>72,005</td>
</tr>
<tr>
<td>Douai</td>
<td>Douai</td>
<td>23,808</td>
</tr>
<tr>
<td>Valenciennes</td>
<td>Valenciennes</td>
<td>19,499</td>
</tr>
<tr>
<td>Cambrai</td>
<td>Cambrai</td>
<td>17,916</td>
</tr>
<tr>
<td>Hazebrouck</td>
<td>Hazebrouck</td>
<td>7,656</td>
</tr>
<tr>
<td>Avesnes</td>
<td>Avesnes</td>
<td>3,083</td>
</tr>
<tr>
<td>Arras</td>
<td>Arras</td>
<td>23,485</td>
</tr>
<tr>
<td>Boulogne</td>
<td>Boulogne</td>
<td>25,732</td>
</tr>
<tr>
<td>St. Omer</td>
<td>St. Omer</td>
<td>19,032</td>
</tr>
<tr>
<td>Béthune</td>
<td>Béthune</td>
<td>6,903</td>
</tr>
<tr>
<td>Montreuil</td>
<td>Montreuil</td>
<td>3,687</td>
</tr>
<tr>
<td>St. Pol</td>
<td>St. Pol</td>
<td>3,421</td>
</tr>
<tr>
<td>Calais</td>
<td>Calais</td>
<td>46,129</td>
</tr>
<tr>
<td>Abbeville</td>
<td>Abbeville</td>
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</tr>
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<td>Péronne</td>
<td>4119</td>
</tr>
<tr>
<td>Montdidier</td>
<td>Montdidier</td>
<td>3790</td>
</tr>
<tr>
<td>Doullens</td>
<td>Doullens</td>
<td>3912</td>
</tr>
</tbody>
</table>

*As the capital of a department is always the capital of its arrondissement, and as all the chief towns of arrondissements are given, the number of their subdivisions in any department is readily ascertained.*
Le Maine, 23,164; La Flèche, 4,629; Meung, 1,984; Saint Cloud, 3,763.

Laval, 17,810; Mayenne, 9,782; Châtillon Gouaix, 6,226.

Aron, 35,901; Saumur, 11,292; Bagé, 3,480; Benetouil, 3,288; Sigy, 2,130.

35. SARTHE, 466,868.
36. MAYERNE, 361,705.
37. MAINE ET LOIRE, 477,270.

38. LOIRE INFERIEURE, 470,738.
39. MORBIHAN, 449,743.

40. FINISTERE, 546,955.
41. COTES DU NORD, 603,563.
42. ILLE ET VILAINE, 547,259.
43. VENDEE, 341,819.
44. DEUX SEVRES, 304,103.
45. VIENCE, 288,002.

46. CHARENTE, 365,126.
47. CHARENTE INFÉRIEURE, 449,449.

48. HAUT RHIN, 407,019.
49. BAS RHIN, 561,859.
50. HAUTE SAONE, 313,298.
51. DOUBS, 376,274.
52. JURA, 315,355.
53. YONNE, 355,237.
54. COTE D'OR, 385,624.
55. SAONE ET LOIRE, 318,507.
56. AIN, 346,188.

57. RHONE, 482,924.
58. LOIRE, 412,497.
59. HAUTE LOIRE, 293,284.
60. ARDECHE, 353,723.
61. LOZERE, 141,735.
62. GARD, 366,259.

63. HERAULT.
64. AUDE, 281,088.
65. TARN, 346,614.
66. HAUTE GARONNE, 45,727.
67. PYRENEES ORIENTALES, 166,325.

68. ARRIEGUE OU ARRIEGE, FOX, 4,699; Pamiery, 6,905; Saint Germain, 4,832.
69. AVEYRON, 37,051.

70. LOT, 287,200.
71. TARASCON, 24,184.

* St. Servan is little more than a suburb of St. Malo, to which it population is about 2,600.
Political Divisions and Administration.—This division into departments serves as a basis for the other administrative divisions.

France is divided for military purposes into nineteen provinces or "military divisions" of these we subjoin a list, according to the arrangement made in 1795, when two military divisions, the head-quarters of which were at Caen and Perigueux, were suppressed.

<table>
<thead>
<tr>
<th>No. of Department</th>
<th>Head Quarters</th>
<th>Departments included</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>PARIS</td>
<td>Seine, Seine et Oise, Seine et Marne, Aisne, Oise, Loir et Cher, Eure et Loir</td>
</tr>
<tr>
<td>II.</td>
<td>CHALONS</td>
<td>Ardenne, Meuse, Marne</td>
</tr>
<tr>
<td>III.</td>
<td>METZ</td>
<td>Moselle, Meurthe, Voges</td>
</tr>
<tr>
<td>IV.</td>
<td>TOULOUSE</td>
<td>Indre et Loire, Loire et Cher, Maine et Loire, Mayenne, Sarthe</td>
</tr>
<tr>
<td>V.</td>
<td>STRASBOURG</td>
<td>Haut Rhin, Bas Rhin</td>
</tr>
<tr>
<td>VI.</td>
<td>BESANCON</td>
<td>Ain, Doubs, Jura, Haute Saône</td>
</tr>
<tr>
<td>VII.</td>
<td>GRENOBLE</td>
<td>Isère, Drôme, Hautes Alpes</td>
</tr>
<tr>
<td>VIII.</td>
<td>MARSEILLE</td>
<td>Bouches du Rhône</td>
</tr>
<tr>
<td>IX.</td>
<td>MONTPELLIER</td>
<td>Hérault, Gard, Lozère, Aude, Aveyron</td>
</tr>
<tr>
<td>X.</td>
<td>TOULOUSE</td>
<td>Pyrénées Orientales, Ariège, Haute Garonne, Hautes Pyrénées, Gers, Tarn, Gers</td>
</tr>
</tbody>
</table>

| XI. | BORDEAUX | Landes, Girond, Basses Pyrénées, Dordogne, Lot, Lot et Garonne |
| XII. | NANTES | Loire-Inférieure, Loire-Inférieure, Deux-Sèvres, Vendée, Vendée, Charente |
| XIII. | NÎMES | Gard, Gard, Gard, Hérault, Hérault, Hérault |
| XIV. | ROUEN | Seine-Inférieure, Eure, Manche, Calvados, Manche |
| XV. | BORDEAUX | Cher, Indre, Allier, Creuse, Nièvre, Haute Vienne, Corrèze |
| XVI. | LILLE | Nord, Pas-de-Calais, Somme |
| XVII. | BASTIA | Corse |
| XVIII. | DIJON | Côte-d'Or, Saône-et-Loire, Saône-et-Loire |
| XIX. | LYON | Rhône, Loire, Cantal, Puy-de-Dôme, Haute Loire |

The principal fortresses are: along or near the Belgian, Prussian, and Bavarian frontier—Gravelines, Dunkerque, Calais, Cambrai, Valenciennes, Conde, Maubeuge, Avesnes, Rocroi, Valenciennes, Stavelot, Thionville, Metz, Bitche, and Weismes; along the Rhine frontier—Haguenau, Strasbourg, Schwetzingen, and Neuf Brisach; towards the Jura—Belfort or Belfort, Besancon, and the new fort of the Ecluse towards the Alps and the Jura frontier—Grenoble and Briançon; along the Spanish or Pyrenean frontier—Perpignan, Belleasso, Mont Louis, St.
Jean-Pied-de-Port, and Bayonne. The naval dock and building yards are Brest, Toulon, Rochefort, Cherbourg, and Lorient. Sloops of war are built also at Bayonne, Nantes, and St. Servan, a suburb of St. Malo. In time of war Dunkerque and St. Malo send out a great number of privateers.

The administration of the laws in France has led to other divisions. The smallest judicial divisions are cantons, each of which is under a justice of the peace (jugé de paix). There are several justices of peace; in the large towns, which consist of but one commune, there are usually several justices. These juges de paix have a final jurisdiction in smaller matters; and all suits must be brought before them. If any case, for instance, if possible, to an amicable adjustment, before they are carried into a superior court. They are all salaried, and are professional men. The whole number of cantons in the kingdom is 28,544. The marais of commerce appear to have also some judicial authority. The Tribunaux de Premiere Instance, or primary courts, which may perhaps be compared to our quarter-sessions, are one for every arrondissement. The whole number of arrondissements in France is 363. Each tribunal consists of from three to eight or more members (besides elementary members), according to the population or business of the arrondissement, with a procureur du roi, or attorney for the crown. These courts take cognizance of civil and criminal cases within certain limits. Suits of offence are held against the state, and the section of the tribunal which takes cognizance of criminal cases is called Tribunal de Police Correctionnelle. The Cour Royales (twenty-seven in number) are the highest courts (with the exception of the Cour de Cassation), and may be compared with our supreme courts, having jurisdiction over several departments as given below, and the number of the judges varies according to the extent and business of the circuit over which they preside. The Cour Royale of Paris consists of fifty judges, and the whole number of judges of these courts is about nine hundred; these salaries are very small. Each court royale is divided into several chambers; one decides on bills of indictment, in the same manner as an English grand jury; another tries criminal cases; others take cognizance of civil cases. Some members of these courts vote the chief town of the department subject to their jurisdiction about once in three months for the purpose of holding Cours d'Assee, or assize courts for criminal cases exclusively. An appeal lies from the subordinate courts to the Cour Royales; but not from these to any other court, except to the Cour de Cassation, at Paris, and that, not on questions of fact, but only as to matters of law. The Cour de Cassation can, if it finds any defect of this kind, order a new trial before another Cour Royale. [Cassation.] The decisions of all these tribunals are regulated by Les Codes, or French laws. Juries are only occasionally employed, and are under regulations materially different from our own.

COURS ROYALES.

Place of

Agg.

Aix.

Amiens.

Angers.

Bastia.

Bezaqon.

Bourges.

Boulogne.

Caen.

Com.

Dijon.

Douai.

Digne.

Laon.

Lyon.

Metz.

Montpellier.

Nancy.

Nimes.

Orleans.

Paris.

Pau.

POITIERS.

Charente Inferieure, Deux Sèvres, Vendée, and Deux Seine.

Rennes.

Côtes du Nord, Finistère, Ille et Vilaine, Loire Inferieure, Morbihan.

Rouen.

Allier, Cantal, Haute Loire, Puy de Dôme.

TOULOUSE.

Ardeche, Haute Garonne, Tarn, Tarn et Garonne.

The whole cost of the administration of justice in France, according to the Budget of 1838, is 12,000,000 francs, which is thus distributed:—

Central Administration 524,800 francs

Council of State 516,400

Cour de Cassation 969,000

Cour Royales 4,243,130

Cour d'Assises 1,250,000

Tribunaux de Premiere Instance 5,880,145

Tribunaux de Commerce et de Police 242,300

Justices de Paix 3,103,200

Expenses of Criminal Justice, and of Civil and Criminal Statistics 3,322,000

Miscellaneous 45,000

19,000,375 francs

The ecclesiastical division of France has undergone many changes. Before the Revolution there were eighteen archbishoprics, exclusive of Avignon, which has been reduced to a simple bishopric, and four united with others, viz., Arles and Embrun with Aix; Vienne with Lyon; and Narbonne with Toulouse: the addition of Avignon makes the present number fourteen. The archbishopric of the Revolution is called the bishopric of some hundred and seven bishops in France: one in the county of Nimes (Nîmes), and two (Annecy and Maurienne), in Savoy in Italy; two (Bâle and Lausanne) in Switzerland; and two (Tourne and Nantes) in the Low Countries. Besides these, four French bishoprics were under the jurisdiction of German archbishoprics, making the whole number of French bishoprics one hundred and eleven. Of these dioceses forty-nine have been suppressed: viz., Agde, Alais, Apt, Arles, Avignon, Auxerre, Bazas, Bordeaux, Châlons, Coutances, Dijon, Elbeuf, Espé (St. Brieuc), Finc, Flavigny, Guérande, Laon, Lausanne, Le Mans, Le Puy, Mâcon, Mâcon, Mâcon, Montauban, Montpellier, Nantes, Nevers, Nîmes, Orthez, Orléans, Paris, Perpignan, Poitiers, Rouen, Saintes, Soissons, Toulouse, Vannes, Vézelay, Ypres.

Archbishoprics in Italy, and Bishoprics with the Departments included in them. Each Archbishopric is followed by its suffragan dioceses.

Archbishoprics in Italy, and Bishoprics with the Departments included in them. Each Archbishopric is followed by its suffragan dioceses.
bills may originate with either of the three branches of the legislature, except money bills, which must originate in the Chamber of Deputies; and the bill may be rejected by either branch of the legislature cannot be brought in again the same session. The civil list is fixed at the commencement of every reign, and cannot be altered during that reign. The list, and head, containing ten articles.—Les Deux Chambres (Of the Chamber of Peers).—This head provides for the assembling of this chamber simultaneously with the deputies, and renders every sitting illegal (except when the chamber is exercising its judicial power) unless it is held during the session of the deputies. The deputies are vested in the king; (the princes of the blood peers by right of birth;) their number is unlimited, and their dignity may for life or hereditary. (Hereditary peers have been since abolished.) The peers have no power of entry in anything else, except to vote on the age or voting under thirty. The chancellor of France is president, or, in his absence, a peer nominated by the king. The sittings of the peers are public. The chamber takes cognizance of offences against the state. A peer can only be removed from the authority of the chamber, as is not amenable to any other tribunal than the chamber in criminal matters.

4th head, containing sixteen articles.—Les Deux Chambres des Deputes (Of the Chamber of Deputies).—This head provides for the sessions of the deputies. The head guarantees the sittings of the chamber. The deputes must not be less than twenty-five years of age and the deputes not less than thirty (since reduced to twenty-five), and each must possess whatever other qualifications the law requires. The deputes are elected for five years, and one-half of the deputes for each department must be residents in it. The chamber elects its own president at the opening of each session. Its sittings ordinarily are public; but any five members can require that it form itself into a secret committee. Bills are discussed by the committee selected for the purpose; they can be levied without the consent of both chambers. The land-tax (impôt foncier) can be granted only by year; other taxes may be voted for seven years. The king concedes the two-thirds, and the king's assent resolves that of the deputes, but may, in that case assemble a new one within three months. All members are free from arrest for debt during the session and for six weeks before and after, and from arrest on a criminal charge during the session, unless taken in the act or arrested by permission of the chamber.

5th head, containing two articles.—Les Ministres (Of the Ministers).—These may be members of either chamber; and have, besides, the right of entry into the other chamber, in which they can exercise their functions therein. This head provides for the payment not only of the Catholic priesthood, but of the ministers of other Christian denominations, out of the public purse. It insures the liberty to all Frenchmen of printing and publishing opinions (subsequent enactments have, however, restricted this freedom), and prohibits the re-establishment of the censorship. It abolishes the conscription; provides for the abolition of all political offences previous to the restoration of the Bourbons; and guarantees the security of property and all the so-called 'national domains,' except when the public good, as made out in a legal manner, requires the sacrifice of individual property, in which case the owner must be indemnified.

6th head, containing eight articles.—Droits publics et nationaux de la France (Public or National Rights of the French Nation).—This head provides for the continuance of the previously existing institutions 459, having been increased within the last few years from 430. They are thus returned:—

1. Department. Seine (containing Paris and its environs) 14 members.
It must be observed that this gives the anticipated revenue, and the sums granted by the Chambers.

### REVENUE.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue arising from landed property</td>
<td>2,692,000,000</td>
</tr>
<tr>
<td>Full tax, tax on persons, door and window tax</td>
<td>85,000,000</td>
</tr>
<tr>
<td>Taxes</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Stamps on registry, and changes of property</td>
<td>956,000,000</td>
</tr>
<tr>
<td>Revenue arising from the national property, such as the national domain, loans, &amp;c.</td>
<td>39,000,000</td>
</tr>
<tr>
<td>Customs and indirect taxes</td>
<td>5,046,000,000</td>
</tr>
<tr>
<td>Produce of works carried on account of the government, such as the manufacture of snuffs and of gunpowder, and the posts</td>
<td>199,000,000</td>
</tr>
<tr>
<td>Sandies and extraordinaries</td>
<td>13,000,000</td>
</tr>
<tr>
<td>Total revenue</td>
<td>1,033,000,000</td>
</tr>
<tr>
<td>Or about</td>
<td>44,627,000</td>
</tr>
</tbody>
</table>

### EXPENDITURE.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of justice and of public worship (including the charge of the public printing-offices or kings's printing-office)</td>
<td>65,175,272</td>
</tr>
<tr>
<td>Foreign and Marine</td>
<td>7,240,463</td>
</tr>
<tr>
<td>Navy</td>
<td>6,407,364</td>
</tr>
<tr>
<td>Public Instruction</td>
<td>19,065,672</td>
</tr>
<tr>
<td>Sinking fund and charging on the national debt, securities, sinking fund, pensions</td>
<td>549,071,176</td>
</tr>
<tr>
<td>Or about</td>
<td>1,060,163,329</td>
</tr>
</tbody>
</table>

The troops were distributed as follows:

- **Infantry.** Veteran Subaltern Officers. 10 companies; Veteran Footiers. 26 battalions; Infantry of the Line. 67 regiments; light infantry. 31 battalions. 3 battleships. 12 frigates. 28 squadrons. 18 battalions, 30,000 men; 87 companies, 29,951 men. The personnel in Africa, 3 battalions; Training Companies (Compagnies de discipline). 12 companies.

- **Cavalry.** Veteran Cavalry. 4 companies; Carabiniers. 4 regiments; Chasseurs. 12 dits.; Dragons. 12 dits.; Light Dragons (Chasseurs). 12 dits.; Hussars; 12 dits.; Almains. 6 dits.; Natives. 6 dits.; African Light Dragons (Chasseurs d'Afrique). 3 dits.

The military and engineers' force is 12,000,000 men.

Of the military seminars the Ecole Polytechnique is the most celebrated. The national guard corresponds to our yeomanry and militia; and as every town of consequence has a force of this description, the number of men trained to the use of arms is immense.

The French Navy, in the year 1836, consisted of the following vessels:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ships of the line, in service, or in building</td>
<td>83,174</td>
</tr>
<tr>
<td>Frigates</td>
<td>60</td>
</tr>
<tr>
<td>Corvettes</td>
<td>31</td>
</tr>
<tr>
<td>Brigs</td>
<td>30</td>
</tr>
<tr>
<td>Gunboats</td>
<td>42</td>
</tr>
<tr>
<td>Cannons and luggers</td>
<td>10</td>
</tr>
<tr>
<td>Steam-boats</td>
<td>3</td>
</tr>
<tr>
<td>Other vessels</td>
<td>10</td>
</tr>
</tbody>
</table>

Vessels of all kinds 213

### National Debt.

- **Military.** 31,100,000,000 francs.
- **Public Instruction.** 2,000,000,000 francs.
- **Revenue.** 1,033,000,000 francs.
- **Expenditure.** 1,060,163,329 francs.
- **Defraying the national expenses of the government.** 1,033,000,000 francs.
The predominant religion of France is doubtless the Catholic; but there is a considerable number of Protestants, especially in Alsace and in the bank of the Rhine. According to the statements of M. Balbi, more than fourteen-fifteenths of the population belong to the Catholic church; but this statement is to be received as true only upon the assumption that all the Protestants who do not worship under some dissenting form. The ecclesiastical divisions of the country have already been given. Those of the Catholic hierarchy who have the dignity of cardinal have a yearly income of about 18,000; the archbishops have about 800; those of the bishops' salaries, 300; and the working clergy the incomes are very small, from 200 to 300 a year. There is one in almost every commune. The number of clergy in 1836 was as follows:—

| Archbishops | 14 |
| Bishop | 16 |
| Vicars-general | 17 |
| Canons | 660 |
| Curés | 3,401 |
| Deservans | 26,776 |
| Vicars | 6,160 |
| Total | 37,295 |

Before the first French Revolution, the country abounded with monastic establishments for both sexes, some of them endowed with vast possessions. The abbots and convents possessed great revenues, which were often converted into churches, and the sale of their property precludes their being re-established. The nunneries and abbeys for women for the most part remain, and have existed throughout the Revolution, with the exception of a few years at the time of its greatest violence. The French nun, who amount to more than 20,000, do not, except a few, lead a life of pure meditation, but are actively engaged in attendance upon the sick, or in the instruction of youth.

The Protestants are partly of the Lutheran, but chiefly of the Reformed church. The churches of the members of the Lutheran church are found in Alsace, in the capital, and in the department of Isère, a part of the former province of Dauphiné. The members of the Reformed church amount to about 1,000,000, according to M. Balbi; they constitute by far the majority of the French Protestants. They are chiefly in the south Languedoc, and in the west, about Rochelle, once the stronghold of the Huguenots. A few Baptists are found in the Jura and the Vosges, and are remarkable for the innocence of their lives, and the simplicity of their manners and customs. So far as Paris, Marseille, Bordeaux, Strasbourg, Lille, Metz, Nancy, Dijon, Besançon, Montpellier, and at Winzenheim, in the department of Haut Rhin, they are calculated by some authorities at 60,000. The Catholic priests are chiefly educated in Seminaries established for the purpose of their children. Instruction is free. There is one establishment for higher studies at Paris; and above 200 seminaries scattered throughout France. Strasbourg is the chief place of instruction for the clergy of the Lutheran church; Montauban for those of the Calvinistic or Reformed church.

The cost to the state of the maintenance of public worship, according to the budget of 1838, is as follows:—

| Cost of the administration of this branch of the public service | 121,500 f. |
| Church of Jesus, or Foreign (Protestant) | 5,000 f. |
| Cardinals, Archbishops, Bishops, etc. | 37,000 f. |
| Members of Chapters and Parochial Clergy (do.) | 28,145 f. |
| Royal Chapter of St. Denis | 11,000 f. |
| Seminaries | 1,000 f. |
| Grant (Secours) to Ecclesiastics and Masts | 1,070,000 f. |
| Maintenance of clergy in the Sees and Dioceses of the Church | 630,000 f. |
| Building and keeping up cathedrals | 1,600,000 f. |
| Maintenance of churches in Catholic parishes | 400,000 f. |
| Protestant society salaries | 800,000 f. |
| Allowance of the bishops (do.) | 25,000 f. |
| Jewish worship | 110,000 f. |
| Total | 38,433,500 f. |

Before the Revolution, France had twenty-three universities, of which Paris was the most important and enjoyed the greatest privileges. The others were at Aix, Angers, Avignon, Besançon, Bourges, Bordeaux, Caen, Cahors, Dijon, Douay, Montpellier, Nantes, Orange, Orléans, Pau, Perpignan, Poitiers, Pont-de-Mousson, Reims, Strasbourg, Toulouse, and Valence. Under Bonaparte, a new one was opened in
nised with the title of Université, which has continued with some modifications to hold to the present time the chief direction of education. Of this body, which is incorporated, and which possesses large disposable funds, arising partly from real property, partly from public grants, and partly from the payments of pupils, all public functionaries are members. The highest officer of this body is the minister of public instruction, who has a seat in the cabinet; he fills up all appointments in this branch of the administration, and all vacancies in the academies and colleges, under the recommendation however of the local authorities, by whom strict examinations are instituted. He is assisted by a council of ten men, members of the highest rank in the literary world. Twenty-six académies universitaires are established in different parts of France; and the whole number of persons in the public instruction service, both of primary and higher branches of the académies are at Aix, Amiens, Angers, Besancon, Bordeaux, Bourges, Caen, Cahors, Clermont, Dijon, Douai, Grenoble, Limoges, Lyon, Metz, Montpellier, Nancy, Nimes, Orleans, Paris, Pau, Poitiers, Rennes, Rouen, Strasbourg, and Toulouse. Each académie consists of a rector or superintendent, who inspects all schools and places of public instruction within his circuit, and communicates with the higher authorities at Paris. He is assisted and controlled in the execution of his functions by a council of ten members. These form the administrative portion of the académie. The branch of instruction, if the institution is complete in all its parts, comprehends the five faculties of theology, law, medicine, literature, and the sciences; together with a college or high-school. Instruction in the academies is furnished in the colleges or high-schools, which are established in almost all the larger towns. Paris has several collèges. That of Louis le Grand, founded in 1536-7, 1654 pupils; that of St. Louis 999; that of Bourbon 864; that of Charlemagne 810; that of Henri IV. 720; that of Versailles 409; that of Rolleau 396; and that of Stanislas 330. The collège Henri IV. is eminent for literature; the collège Stanislas for philosophy. The lowest grade of schools comprehends the écoles primaires, or elementary schools, in which France until of late years was miserably deficient.

In 1833 a law was passed ordaining that every commune by itself, or by uniting with others, should have one school of elementary instruction (i.e. reading, writing, arithmetic, and the higher branches of common history and geography); that every commune, the population of which exceeded 6000, should have also a school for superior instruction (i.e. in addition to the requirements of the lower schools, the elements of geometry, and its application to the arts, the phenomena natural and vital history, as applied to the ordinary habits and pursuits of life, the elements of history and geography, and more especially the history and geography of France); and that every department should have a normal school (school for the instruction of schoolmasters, both by instruction and uniting with some other department). These schools are supported partly by private foundations, donations, and legacies; partly by the communal, departmental, or general government.

The state of education in 1836 was as follows:—

36,000 elementary schools for boys.
11,000 elementary schools for girls.

47,000, containing

73 normal schools for training teachers for the elementary schools.
873 boarding-schools.
94 schools for superior instruction.
30 Collèges Communars, or district high-schools, with 27,000 scholars.
41 Collèges Flugare, or royal high-schools, with about 15,000 scholars.

All the persons who are incapable of paying for the instruction of their children are to have them educated gratis at the schools of elementary instruction; and a certain number selected after an examination, are educated gratis at the schools of superior instruction. The masters of the elementary schools have a residence, and receive 200 francs, or little more than 14l. yearly salary; the masters of the superior schools have a residence and a salary of 400 francs, or above 6l. The whole charge to the state of the department of public instruction, according to the budget of 1838, is 19,065,573 francs, or nearly 800,000£; which is thus distributed:—

Central administration
General services
Department of public and academic administration
Superior instruction—faculties
Secondary instruction
Elementary instruction general fund
Primary normal schools
Literary and scientific establishments
Subscriptions to learned works, encouragements, legacies, collected, and publications of unedified works

Total

19,065,573

The subjoined table of the comparative state of education in France is quoted by Mr. Bulwer in his France—Social, Literary, Political. It states the number of those who are supported by the state in each of the department, in 1828-9, in the military census. It furnishes data for estimating, not the present means of instruction, but the present state of knowledge among the younger part of the adult male population of France. The departments are given in the order of enlightenment.

<table>
<thead>
<tr>
<th>Department</th>
<th>Proportion of those who can read and write in every 100 enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meuse</td>
<td>24</td>
</tr>
<tr>
<td>Doubs</td>
<td>65</td>
</tr>
<tr>
<td>Jura</td>
<td>72</td>
</tr>
<tr>
<td>Haute Marne</td>
<td>68</td>
</tr>
<tr>
<td>Haute Rhin</td>
<td>68</td>
</tr>
<tr>
<td>Seine</td>
<td>62</td>
</tr>
<tr>
<td>Haute Alpes</td>
<td>62</td>
</tr>
<tr>
<td>Meurthe</td>
<td>62</td>
</tr>
<tr>
<td>Aube</td>
<td>58</td>
</tr>
<tr>
<td>Moselle</td>
<td>59</td>
</tr>
<tr>
<td>Seine et Oise</td>
<td>54</td>
</tr>
<tr>
<td>Eure et Loir</td>
<td>54</td>
</tr>
<tr>
<td>Seine et Marne</td>
<td>54</td>
</tr>
<tr>
<td>Oise</td>
<td>54</td>
</tr>
<tr>
<td>Hautes Pyrénées</td>
<td>53</td>
</tr>
<tr>
<td>Calvados</td>
<td>52</td>
</tr>
<tr>
<td>Eure</td>
<td>51</td>
</tr>
<tr>
<td>Allier</td>
<td>49</td>
</tr>
<tr>
<td>Pas de Calais</td>
<td>49</td>
</tr>
<tr>
<td>Yonne</td>
<td>47</td>
</tr>
<tr>
<td>Basse Pyrénées</td>
<td>47</td>
</tr>
<tr>
<td>Basses Alpes</td>
<td>46</td>
</tr>
<tr>
<td>Nord</td>
<td>45</td>
</tr>
<tr>
<td>Rhône</td>
<td>45</td>
</tr>
<tr>
<td>Hérault</td>
<td>45</td>
</tr>
<tr>
<td>Orléans</td>
<td>45</td>
</tr>
<tr>
<td>Somme</td>
<td>44</td>
</tr>
<tr>
<td>Seine inférieure</td>
<td>43</td>
</tr>
<tr>
<td>Manche</td>
<td>43</td>
</tr>
<tr>
<td>Loire</td>
<td>43</td>
</tr>
<tr>
<td>Gironde</td>
<td>40</td>
</tr>
<tr>
<td>Gard</td>
<td>40</td>
</tr>
<tr>
<td>Dordogne</td>
<td>40</td>
</tr>
<tr>
<td>Charente inférieure</td>
<td>39</td>
</tr>
<tr>
<td>Bouches du Rhône</td>
<td>36</td>
</tr>
</tbody>
</table>

From the above table it will appear that the north and east of France are the parts in which elementary instruction is most widely diffused; and the central and western those in which there is least. The efforts made since 1833 to instruct the people go far to redeem France from the reproach of indifference on this head. The state of education previous to that period was indeed far from commensurate with the high rank held by the country in the social scale. The proportion of children at school in France was only about two-thirds of the proportion in Prussia, one-half that in England and Bavaria, one-third of the proportion in Russia, the canton of Vaud, and Wurttemberg, and one-fifth of the proportion in the United States of America. At present the proportion of pupils of all ages in France is about one-fourth greater than before 1833; but France is in this particular still behind Austria. Of the extent of crime an estimate may be formed from the following data, which we borrow from the official re-
turns for the year 1834. The numbers of those accused in that year was 5125, viz. 1557 for crimes against the person, and 3568 for crimes against property. The number of persons accused before the Cours d'Assises, which have jurisdiction in the more important criminal cases, was 6869, being in the proportion of 71 persons per 100,000, as compared with the whole population of the country. Of the 6869 persons accused, 77 were tried twice, and 3 three times, making the apparent number of accused 6926: of whom 2216 were charged with crimes against the person, and 4783 with crimes against property. The annual consumption of cotton in the different branches of this manufacture is about 30,000,000 kilograms, or more than 1,000,000 cuws.

The cotton manufacture has increased since 1812 in a greater proportion than that of wool, and has probably tripled: the annual consumption of wool in these manufactures is probably above 50,000,000 kilograms, or more than 1,000,000 cuws.; and the process of manufacture and the fineness and excellence of the fabrics have undergone great improvements. The north and east of France are the chief seats of this manufacture. Rouen has been long the Manchester of France; and Paris, Troyes, St. Quentin, and the towns of the department of the Nord, also participate largely in this manufacture. Printed calicoes are made at Rouen and Beauvais; but especially at Colmar, Mülhausen, and other places in the department of the Bas-Rhin, the printed cottons of which are much approved in the German markets for the vividness of their colours (especially the Turkey-red), and their other qualities.

The silk manufacture is carried on chiefly in the south. The population of Vaucluse and Languedoc, which is largely increased by the disasters of the Revolution and the commercial inactivity of the empire from 1810 to 1813, has now increased to more than 150,000.

The silk manufacture has been improved and multiplied by the substitution of the raw silk for the silk-worm, and the quantity of mulberry trees has increased from 3,631,748 in 1820, to 14,879,404 in 1824, or more than 50 per cent. in 14 years. They are chiefly grown in the department of Gard, Drôme, Vaucluse, and Ardèche.

Linen of the finest quality is manufactured in Flanders, at Cambrai and Douai, in the department of St. Quentin, and in the departments of Lorraine and Savoie. Linen is made at Chalon, Alençon, and Bayeux in Normandy; also at Valenciennes and Douai; and in some other places.

The working of the metals has much increased, especially iron. The quantity of iron smelted in 1831 was about 100,000 tons; since 1820 it has increased to about 200,000 tons, and various new methods of working this useful metal, for which France was formerly dependent on foreigners, are now produced at home. The quality and appearance of the steel and wrought-iron goods have much improved; yet the quality of the English goods is inferior to that of the French. The iron works are largely extended, and the demand against the Russian and Swedish iron only by means of protecting duties. The principal iron-works are in the departments of the valley of the Loire, especially near Nantes, and the department of Forez about St. Etienne.

In the manufacture of cotton and silk, France is almost equal to Switzerland; and for chronometers and instruments for scientific purposes it is not surpassed by any country. The inventions of the French chemists and the improvement of chemical science have done much in producing with skill and expedition the many chemical agents employed in the various branches of manufacture, and particularly dyeing.

The commoner sort of French earthenware has much improved in beauty of design. Fine porcelain is made at Angoulême, and at Sèvres near Paris, and on the Seine. Rouen manufacture porcelain equal to that of England in beauty of workmanship, and it is perhaps superior in elegance of form.

The commerce of France is considerable: the value in round numbers of the imports for two years, the returns of which are before us, was:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>715,000,000</td>
</tr>
<tr>
<td>1835</td>
<td>30,000,000</td>
</tr>
</tbody>
</table>

Imported.

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials for silk manufacture.</td>
<td>358,000,000</td>
</tr>
<tr>
<td>Unmanufactured,</td>
<td>Total,</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1834</td>
<td>18,187,069</td>
</tr>
<tr>
<td>1835</td>
<td>18,643,639</td>
</tr>
</tbody>
</table>
The number of ships cleared outwards was—

<table>
<thead>
<tr>
<th>Year</th>
<th>French ships, &amp;c.</th>
<th>Foreign, in direct, &amp;c.</th>
<th>In carrying, &amp;c.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>4,221</td>
<td>370,217</td>
<td>866</td>
</tr>
<tr>
<td>1835</td>
<td>4,292</td>
<td>387,139</td>
<td>838</td>
</tr>
<tr>
<td>1836</td>
<td>5,503,933</td>
<td>23,096,544</td>
<td>22,142,202</td>
</tr>
<tr>
<td>1837</td>
<td>11,531,950</td>
<td>13,174,032</td>
<td>19,059,571</td>
</tr>
</tbody>
</table>

The cod fishery employed in 1836, 406 vessels of 51,915 aggregate tonnage, and 10,172 men; the whale fishery 35 vessels of 14,813 aggregate tonnage, and 1183 men. The French whale fishery has been rapidly increasing for many years past.

The means of internal communication in France are much superior to those of Great Britain. The roads are divisible into those maintained by the central government, and designated Routes Royales, and those which are kept up at the cost of the several departments to which they belong, and designated Routes Départementales. Besides these there are chemins vicinaux, or by-roads. The Routes Royales are divided into three classes. They are commonly straight, wider than our English roads; those of the first class are from 43 to 53 feet wide, and frequently planted on each side with chestnut or other large trees, forming long avenues. About one-eighth of all the Routes Royales are paved like a street. With the exception of a few which are carefully kept up, they are in a very bad condition, and a large outlay is required to prevent their being ruined; and in some parts of the road has never been carried to its proposed termination. Those of the first class have a common point of departure, and the distances are measured from the cathedral of Notre Dame, in the heart of Paris. According to the official report, the total length of the Routes Royales, on January 1, 1837, was about 105,581 miles; about one-third or one-fourth are out of repair or unfinished.

Posting along the Routes Royales is strictly regulated by the government. Stations at which post-horses are kept are fixed at convenient distances. The roads are measured by distances of 2200 yards, and divided into eight parts by the number 1256. The routes are of two kinds—louvre de poste (post-roads)—rather longer than five English miles. The postmasters are licensed by government, and none can let post-horses without a license. The charges for posting are fixed by government. The mails are conveyed by a vehicle which is called poste; it carries four passengers, and is supplied with horses at the post-stations. Diligences, vehicles for which England supplies neither name nor resemblance, run with passengers on all the great roads. There are no tolls. The condition of the roads is admirably maintained, and the aggregate length of which, on 1 January, 1837, was 23,000 miles in all states of completeness and repair, is wretched in the extreme.

The inland water communications are carried on by means of the great rivers and by the canals which have been formed. The Schelde or Escaut, the Saône, the Loire, and the Ais, with the canal of Deule, 65 kilometres, or 41 miles long, and several other canals, abundantly supply the department of Nord with the means of water communication. The canal of the Somme, 97 miles long, and the canal of St. Quentin, 58 miles long, including the former canal of Crasot, connect the port of St. Valery, at the mouth of the Somme, with the Escaut and the Oise. The navigation of the Seine commences at Troyes; that of the Aube at Arcis-sur-Aube; that of the Yonne at Auxerre; that of the Marne at St. Dié; that of the Oise at Chaumont; that of the Aisne, a feeder of the Oise, at Neufchatel, between Rheilh and Soissons; and that of the Eure at Pacy. Several canals connect the navigation of this important river system with other parts of France. The canal of St. Quentin connects the Oise with the Somme and the Escaut; the canals of Briare, 34 miles long, and of the Loing, 33 miles long, connect the Seine just below the junction of the Oise with the Loire at Briare; and the canal of Coal, 153 miles long, branches off the Loing, opens another communication with the Loire lower down, at Orléans. These canals were constructed 150 to 200 years since. The canal of Bourgogne connects the navigation of the Yonne, between Auxerre and Joigny, with that of the Seine and the Oise at Saint Jean de Bavos, and being continued by another system of inland navigation, ultimately communicates with the Rhine; the canal of Bourgogne, which is not yet finished, though open for navigation in all its length, is 110 miles long; it follows for the
The water communication of the western part of France consists chiefly of the navigation of the river Vilaine from Rennes, and of some smaller rivers which are navigable only a few miles, and of this canal of the Loire and the Ille and the Rance connects the Rance, a small stream which falls into the bay of St. Malo, at St. Malo, with the Vilaine, at the junction of the Ille, one of its feeders, at Rennes; and saves a tedious and dangerous navigation round the whole promontory of Britanny. At a distance of 180 miles ling it was commenced above thirty years ago, but is only just completed. The canal of the Blavet renders the river Blavet navigable up to Pontivy. Another canal, yet unfinished, but open in part for navigation, is designed to connect Brest with Nantes, avoiding the navigation of a dangerous coast, and affording secure communication in case of a war with England or any maritime power. Its length will be 374 kilometres or 232 miles.

The navigation of the Loire commences at Roanne in France proper, and from Roanne till on the Mostuéjouls, near Mende, that of the Allier above Vichy; that of the Cher at St. Aignan; that of the Indre at Loches; that of the Vienne at Châtellerault; that of the Sarthe at Le Mans; that of the Mayenne at Laval; and that of the Loir at Château du Loir, or at Bras-de-l'Indre, or at the western part of the little basin which it forms as much a more effectual outlet than it does to the produce of central France; the navigation of the great arms of the Loire is very short, (except perhaps of the Arroux, and of the Mayenne and its connected stream,) compared with their whole length; in consequence of which the navigable part of the Seine have been noticed. The canal of the Centre or of the Charolais opens a communication between the Loire, near the junction of the Arroux, and the Saône at Chalon-sur-Saône. It was opened in 1791; the length is about 73 miles, and has an execution of about 500,000 livres, intended to shorten the navigation of the Loire, by avoiding the great bend which makes the junction of the Allier and that of the Indre, called the Canal of Berri. Nantes is the port of the district watered by the Loire and its affluents.

The navigation of the Garonne commences at Cazères, several miles above Toulouse; that of the Ariège at Auribe; that of the Tarn at Galliac; that of the Baise at Nerac; that of the Lot at Enragay; that of the Dordogne to Givonne, or as a tributary, at Montignac. The only navigable canal connected with this system is the Great Canal of Langugedoc, the most important in France. It connects the Garonne, at or near Toulouse, with the Mediterranean. It follows for some distance as a road, and then as a feeder to the Garonne, and passing through a depression between the Cévennes and the Pyrenees follows the valley of the Aude, and the line of the coast to the sea at the port of Cette. Its length is more than 151 miles, and its large dimensions, its immense remanence, its numerous sluices, bridges, and aqueducts, render it one of the most magnificent canals in the world. It was opened in the reign of Louis XIV., A.D. 1681.

The navigation of the Adour commences at St. Sever; the Mirepoix is its tributary, at Mont de Marsan. The port of Bayonne is the channel for the exports and imports of the territory watered by the Adour and its tributaries.

The navigation of the Rhône is liable to interruption after it leaves the lake of Geneva: it recommences a little above Seyssel, on the frontier toward Savoy, and remains open throughout the rest of the course of the river: the navigation of the Saône begins at Seveux, between Gray and Vouzel. The canal of the Centre, which unites the navigation of the Saône with that of the Loire, at the close of the Saône and the Saône above Voray, have been noticed. The canal of Monsieur, or the canal from the Rhône to the Rhine, unites the Saône near St. Jean de Lovre with the Ille, a feeder of the Rhine, just above Strasbourg. It consists of four branches, one from the Saône to the Doubs, above Dôle; the second consists of the navigation of the Doubs and the various cuts by which it is shortened; the third extends from the Doubs, near Monthédiard, to the Ille; the fourth branch, off from the main line near Milhhausen, and enters the Rhine at Honsingue. The length of the canal is about 217 miles. The first part was finished in 1806, the second in 1820, the third in the last few years. There are several canals from the mouth of the Rhône, as that of Bernens, 31 miles long, which enters the sea at Aigue Mortes; that of the étangs, 17 miles long, from the last mentioned canal at Aigue Mortes through the étangs or pools of Mauquio and Thau to the port of Géte, on the Mediterranean; from that of the Rhône at Arles, 29 miles long, to the Port de Bouch, where the Etang de Berre opens into the sea.

Several other canals are in course of construction, of which the most important are the canal from Romieu to Diogin on the Loire, 34 miles long, from Sambre to the Oise, 41 miles long, from the Grand Canal, 16 miles long, to connect the Meuse with the Aisne, and so with the Oise and Seine; the lateral canal of the Loire, extending along the valley of the Loire from Digoine to Briare; the lateral canal of the Oise, 20 miles long; and the canal from the Sèvre of Normandy to the Loire, 64 miles long.

History.—Gallia, or, as we have Englished it, Gaul, was the general term by which this country was designated by the Romans. Little was known of it either to the Greeks of Corinth, or the Phœnicians; the story is that three races of Aquitani, Celta, and Belgae, with an intermixture of some Germans, Ligurians, and Greeks: of these the Belgae occupied the north and north-east, the Celts the western, central, and south, the Aquitani the south-west, which race, must have settled in Gaul at an early period, as the wants of an increased population led them, in the reign of the elder Tarquin of Rome, about B.C. 609, to send out two vast emigrating bodies, one into Italy, the northern part of which was subdued and peopled by it, and the other toward, into Germany and Hungary. [Bourges.] Two great countries of Germany, Bohemia (Bohemen) and Bavaria (Boharia), derive their names from one of the tribes (the Boiains') engaged in this early migration. The part of Gaul which was subdued and peopled by the Belgae was the Mediterranean coast, on which they established colonies. The earliest and most important of these colonies was Massalia, or Massilia (now Marseille), founded by the people of Phœnicia (itself a Greek colony of Asia Minor) B.C. 600, and augmented by the emigration of the main body of the Phœnicians when they sought refuge, B.C. 546, from the pressure of the Persian monarchy. The power or influence of Massilia extended over the neighbouring districts, and several colonies were founded on the coasts of Gaul, Italy, Spain, and England. Of these Agathia (Agde), Antipolis (Antheis), Nicea (Nice), &c., are the earliest. At the commencement of the second Punic war Hannibal marched through Gaul in his route from Spain into Italy; and Scipio, the Roman consul, who had conveyed an army of 15,000 to the mouth of the Rhone, sent a body of cavalry up the banks of the Rhodanus (Rhône) to reconnoitre, and these had a smart skirmish with a body of Hannibal's Numidians. Hannibal however marched onward into Italy, to which country Scipio also returned, and, finding his army forward under his brother Cneus into Spain.

After the close of the Punic wars the Romans gradually extended their power in Gaul. Fulvius Flaccus and his successor, Sextus Calvinus, conquered the country north and some part of the middle coast of the Mediterranean was now secured by the foundation of the Roman colony of Aquitaine (Aix), B.C. 122; and that portion of Transalpine Gaul which the Romans had subdued was shortly after divided into four Roman provinces. The Upper or Narbonet Martius (Narbonne), colonised the following year, B.C. 117 became the capital. Massilia, nominally in alliance with, but really in subjection to Rome, was within the province. In the migratory invasion of the Cimbri, Teutones, and Ttonii, the Rhône was long the seat of war: the Roman armies were repeatedly defeated; in one dreadful battle (B.C. 104) they are said to have lost 80,000 men. The province was however rescued from the invaders by the great victory obtained by Marius (B.C. 101) near the Romane and Ambrius near Aix. The Cimbri had marched into Italy.

The conquests of Caesar [Cesar] nearly reduced the whole country between the Rhône (Rhine), the Alps, the
Mr. Sterramen, the Pyrennees and the ocean, into subjection to Rome. The Aquitani and the tribes who inhabited the Alps were not subdued till afterwards; the former were conquered by Massala: some of the Alpine tribes retained their independence till the time of Nero.

Under Augustus, Gaul was divided into four provinces—Narbonensis. Celta or Languedonensis, from the colony of Lugdunum (Lyons), founded a little before by Manius Primus, Belgica, and Aquitania: the limits of the last extended beyond the limits of the country of the Aquitani, being augmented by the addition of the country between the Garumna (the Garonne) and the Ligeris (the Loire). Shortly afterwards the province of Belgica was dismembered by two provinces being formed out of the districts along the Rhine (Rhine), to which the names of provinces of Germania Prima and Germania Secunda, or of the First and Second Germany, were given; and at a subsequent period the number of provinces reached, by successive dismemberments of the larger provinces, its maximum, seventeen. We subjoin a table of the principal Gallic nations, mentions the stock to which they belonged, and the Roman province in which they were included; adding the name of the capital of the tribe, or some remarkable town within its limits, with its modern name, which in the case of the capital, is commonly derived from the name of the tribe rather than the original name of the town itself. This will enable the reader to identify the locality of many of the tribes.

<table>
<thead>
<tr>
<th>Tribe of Nation</th>
<th>Capital, or other Important Towns</th>
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<tbody>
<tr>
<td>Celtic and Ligurian Tribes</td>
<td></td>
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<tr>
<td>Volcae—including</td>
<td></td>
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<tr>
<td>Volcae Tectosages Carcaso (Carassonne)</td>
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<tr>
<td>Tolosates, a sub-Tolosa (Toulouse)division of the Volcae</td>
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<tr>
<td>Volcae Arecomici Narbo Martius (Narbonne)</td>
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<tr>
<td>Tasconi</td>
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<tr>
<td>Alaeini (people on the river Atax, or Aude)</td>
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<tr>
<td>Sardones</td>
<td>Hiberis (Elne)</td>
</tr>
<tr>
<td>Rustisia (Toure de Rustyson, near Perpiquoy)</td>
<td></td>
</tr>
<tr>
<td>Saluvius, or Saluvii, Massilia (Marseille) and (a Ligurian tribe) Aquae Sextiae (Aix)</td>
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<tr>
<td>with a number of small tribes adjacent to them</td>
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<tr>
<td>Vosontii</td>
<td>Deva (Dio)</td>
</tr>
<tr>
<td>Gavara</td>
<td>Aveino (Avignon)</td>
</tr>
<tr>
<td>Tescosan</td>
<td>Augusta (St. Paul Trois Chateaux)</td>
</tr>
<tr>
<td>Segalani</td>
<td>Valenti (Valence)</td>
</tr>
<tr>
<td>Allbrigies</td>
<td>Vienna (Vienne)</td>
</tr>
<tr>
<td>Helvii</td>
<td>Alba Augusta (Alps)</td>
</tr>
<tr>
<td>Catriges, and many small tribes</td>
<td></td>
</tr>
<tr>
<td>Centrones, and many other small tribes</td>
<td></td>
</tr>
<tr>
<td>Lingones</td>
<td>Ambriatunum (Langres)</td>
</tr>
<tr>
<td>Bruto, afterwards Augustodunum (Autun)</td>
<td></td>
</tr>
<tr>
<td>Mandubii Ambriam</td>
<td></td>
</tr>
<tr>
<td>Boii</td>
<td>Settled in the country of the Edui in the time of Caesar. (Vide Cesar. de B. G. 3. 28.)</td>
</tr>
<tr>
<td>Sequianii Forum Sequianum (Feurs in Forez) and Lugdunum (Lyons)</td>
<td></td>
</tr>
</tbody>
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<thead>
<tr>
<th>Tribe of Nation</th>
<th>Capital, or other Important Towns</th>
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<tbody>
<tr>
<td>Aulerci Eburones</td>
<td>Mediolanum (Evreux)</td>
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<tr>
<td>Lexovii</td>
<td>Noviomagum (Lisieux)</td>
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<tr>
<td>Vidianenses</td>
<td>Vindacasses (Vieux)</td>
</tr>
<tr>
<td>Arveges</td>
<td>Flavio (Arve)</td>
</tr>
<tr>
<td>Velluci, or Velnici</td>
<td>Germaetum (Valeois)</td>
</tr>
<tr>
<td>Avenstani</td>
<td>Ingens (Avanches)</td>
</tr>
<tr>
<td>Sani, or Essui</td>
<td>Sais (Sez)</td>
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<tr>
<td>Arvi</td>
<td>Vagorium (Arve, or near the river Erve)</td>
</tr>
<tr>
<td>Diablintes</td>
<td>Neapolamum (Jablines, near Mayence)</td>
</tr>
<tr>
<td>Aulerci Cenomani</td>
<td>Sanudumum (Le Mans)</td>
</tr>
<tr>
<td>Turones</td>
<td>Cesarodunum (Tours)</td>
</tr>
<tr>
<td>Arviques, or Ardecti</td>
<td>Juliomagus (Angles)</td>
</tr>
<tr>
<td>Nantuates</td>
<td>Confluentnum (Nantes)</td>
</tr>
<tr>
<td>Redones</td>
<td>Carata (Rennes)</td>
</tr>
<tr>
<td>Veneti</td>
<td>Dariorum (Vannes)</td>
</tr>
<tr>
<td>Osseini</td>
<td>Vorggium (Carhaix)</td>
</tr>
<tr>
<td>Aequotes</td>
<td>(Corseuil, near Dinan)</td>
</tr>
<tr>
<td>Coresteces</td>
<td>(Quimper)</td>
</tr>
<tr>
<td>Carnutes</td>
<td>Autrium (Chartres)</td>
</tr>
<tr>
<td>Auréliani</td>
<td>Geromunum (Orleans)</td>
</tr>
<tr>
<td>Parisi</td>
<td>Lutetia (Paris)</td>
</tr>
<tr>
<td>Mobii</td>
<td>Cenomana (Mans)</td>
</tr>
<tr>
<td>Sequani</td>
<td>Aquitania (Sonne)</td>
</tr>
<tr>
<td>Tiresaces</td>
<td>Augustosobona (Trives)</td>
</tr>
<tr>
<td>Sequani</td>
<td>Vexiotio (Besancon)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Celtiberian Tribes</th>
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<tbody>
<tr>
<td>Helveti, divided into four Cantons: of which two are known, and a third conjectured, and the other unknown, viz.</td>
<td></td>
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<tr>
<td>Tagus-Urbigenus</td>
<td>&quot;Tigurinus&quot;</td>
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<tr>
<td>&quot;Tugenus&quot;</td>
<td>(Zug)</td>
</tr>
<tr>
<td>Rauraci</td>
<td>Augusta Rauracense (Augst, in Switzerland, near Elle)</td>
</tr>
<tr>
<td>Bituriges Cubi</td>
<td>Avraimia (Bourges)</td>
</tr>
<tr>
<td>Lemovices</td>
<td>Augustoritum (Lamor)</td>
</tr>
<tr>
<td>Arverni</td>
<td>Augustonemum (Clermont in Auvergne)</td>
</tr>
<tr>
<td>Vollavii</td>
<td>Recesio (St. Paulien near Le Puy, in Velay)</td>
</tr>
<tr>
<td>Gabali</td>
<td>Ambriostum (Javal, near Mende)</td>
</tr>
<tr>
<td>Rutenses</td>
<td>Segulium (Rodez)</td>
</tr>
<tr>
<td>Caduci</td>
<td>Diviona (Cahors)</td>
</tr>
<tr>
<td>Pictores, or Pictavi</td>
<td>Limonium (Perigors)</td>
</tr>
<tr>
<td>Santones</td>
<td>Mediolanum (Santes)</td>
</tr>
<tr>
<td>Bituriges Vivsae</td>
<td>Burdigala (Bordeaux)</td>
</tr>
<tr>
<td>Petrocori</td>
<td>Vesunia (Perigueux)</td>
</tr>
<tr>
<td>Nitodribges</td>
<td>Aginum (Agen)</td>
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<tr>
<th>Aquitainian Tribe</th>
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<tbody>
<tr>
<td>Boii, or Boaces</td>
<td>Boii, or Baces (Toile de Bouch)</td>
</tr>
<tr>
<td>Vastetes</td>
<td>Cossio (Bazas)</td>
</tr>
<tr>
<td>Tarbelli</td>
<td>Aquae Augustae (Ayes, or Dax)</td>
</tr>
<tr>
<td>Corocates</td>
<td>Corosia</td>
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<tr>
<td>Tarthates</td>
<td>Virus Julii, or Aturos (Aire)</td>
</tr>
<tr>
<td>Elusates</td>
<td>Elua (Eauze)</td>
</tr>
<tr>
<td>Assi</td>
<td>Clinbritteus (Auel)</td>
</tr>
<tr>
<td>Lautatici</td>
<td>Lacto (Lectoure)</td>
</tr>
<tr>
<td>Bigerones</td>
<td>Turba (Tarbes)</td>
</tr>
<tr>
<td>Converde</td>
<td>Lugdunum (near St. Bertrand)</td>
</tr>
<tr>
<td>Consorani, or Consorani and many smaller tribes</td>
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</tbody>
</table>

Ligurian Tribes. |

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<thead>
<tr>
<th>Tribes of Nation</th>
<th>Capital, or other Important Towns</th>
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<tr>
<td>Ligurian Tribes</td>
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</tr>
<tr>
<td>Lugdunensis Prima.</td>
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<tr>
<td>Lugdunensis Secunda.</td>
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<tr>
<td>Lugdunensis Tertia.</td>
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<tr>
<td>Lugdunensis Quarta.</td>
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Ligerian Tribes. |

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<thead>
<tr>
<th>Tribes of Nation</th>
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<tbody>
<tr>
<td>Novempopulana.</td>
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<tr>
<td>Acquain.</td>
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<tr>
<td>Aquitania</td>
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<tr>
<td>Aquitania</td>
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Druidian, had sunk beneath the edicts of the emperors and the growing influence of Christianity.

On the last day of the year 466, the Rhine was crossed by a host of barbarians who never repassed that frontier stream. They consisted of Vandals, Alans, Suevians, Burgundians, and other nations. The Vandals, who first reached the junction of the Rhine, were followed by the Franks, who became the allies of the empire, the approach to the frontier; but on the arrival of the Alans, the Franks in their turn were overcome, and the passage was effected. The devastation of Gaul by this horde of invaders was terrible; the inhabitants of many towns were slaughtered or carried into captivity, the sanctity of the churches was violated and the open country laid waste. Armoricia (the present Brittany), into which the settlement of the British soldiers who had followed Maximus the usurper into Gaul (Bastaygne) had been induced to make, assumed and established, the semblance of independence; but the rest of Gaul became a prey. The Suevians, the Alans, and the Vandals crossed the Pyrenees into Spain: the Burgundians settled, with the sanction of the Roman government, in the east of Gaul, on both sides of the Loire, and the Franks, from the lake of Geneva to the confines of the Rhine and the Moselle; and the Visigoths, who had been long ravaging both the eastern and western Empires, were induced, just before the settlement of the Burgundians (a.D. 412 to 414), to reception the consent of that Gallic nation to settle south and south-west of the Loire. Toulouse was their capital. Both Burgundians and Visigoths took the name of Romans, and professed subjection, which was however merely nominal, to the emperor of the West. The lands in the district were divided between the original possessors and the new comers, who gave up their unsettled migratory course of life upon receiving a permanent interest in the soil.

Hostilities were before long renewed between the troops of the Empire and these new-settled nations; but their settlement opportunely supplied Gaul with the means of defence against a fresh invasion. In a.D. 451, Attila, king of the Huns, with an immense host of barbarians, passed the Rhine at or near the confluence of the Neckar, descended on the Meuse, on the Moselle, and on the Rhine, by conquest or by the threat of an invasion. His power was within a few miles of Paris, and was about to attack the capital. The people of Tongres, and (in a.D. 496) subduced a portion of the Burgundians, who had made an inroad into Gaul; the conquered people recognised Clovis as their king; his fortunate conversation between his father, Arthus, and all the other princes who shared among them the once extensive territories of the Empire were the supporters of Arianism or some other form of doctrine that was looked upon as heretical.

The sway of Clovis extended from the banks of the Lower Vol. X.—3 I
Rhine, the cradle of his power, to the Loire, the Rhône, and the Ocean, for Armoric had submitted to him. He now determined, on the pretext of uprooting Arianiatism, a plea which was calculated to secure him numerous supporters beyond his own confines, to divide the Visigoths, by which he defeated and slew at Vouglé in Poitou. The Burgundians hoping to share in the spoils of the conquered nation, supported Clovis; but the Ostrogoths of Italy supported the Visigoths and prevented their entire subjugation, save by conquering Burgundy, Toulouse, and extending perhaps to the foot of the Pyrenees, fell into the hands of Clovis; but the Visigoths preserved the coast of the Mediterranean, together with Spain, which they had conquered: the Ostrogoths had Provence, and the Burgundians the territory of the Franks, also as guardian of his king, his grandson Amalric. The assassination of the various Frankish kings by Clovis rendered him undisputed head of the tribes of his own nation, and his sovereignty extended over Gaul, with the exception of the parts retained by the Ostrogoths, Visigoths, and Burgundians. Clovis may be considered the real founder of the Frankish monarchy: he died A.D. 511.

The death of Clovis brought on the dismemberment of a monarchy which had been established too short a time for consolidation. The four sons of Clovis had each his share of the regal inheritance. Thierry became king of Austrasia (Champagne, Lorraine, Luxembourg, and the left bank of the Rhine as far as Cologne); Clodomir, king of Orleans (Maine, Angoumois, Poitevin, Orleanois); Cloviskild, king of the courtiers (Picardy, the Netherlands, and part of the Île de France); and Childebert, king of Paris (comprising the rest of the monarchy). But though the sovereignty was divided, the nation was regarded as one, and all the kings aimed at thrones by virtue of the common origin of the Clovis. The Franks had now first invaded Italy, though without success; but their power was increased by the submission of the monarchs and the cession of Provence to them by the Ostrogoths: and ultimately the dismembered monarchy of Clovis was reunited, together with these acquisitions, under Chlotar, the youngest of his sons. Under the successors of Chlotar, France was again repeatedly divided and reunited: it is needless to describe changes which it is difficult to trace and to remember, and which left no other peculiarities to the weak nation than the decline of the kingly power. The various divisions bore the names of Austrasia, which comprehended the eastern and north-eastern parts of France, Flanders, the Rhenish provinces, and part of Switzerland; Neustria, which comprehended the western part of France, Aquitaine, the country south and west of the Loire; and Burgundy, the remainder of France and Switzerland, with some parts of Savoy. The Merovingian kings, the descendants of Clovis, ceased with Childeric III., who was deposed A.D. 752; but the empire held by the hereditary dukes of Austrasia, Pepin I., Herstal, Charles Martel, and Pepin the Breif; while the governors of provinces had acquired all but absolute independence of the crown.

The ascension of Pepin the Breif to the crown, upon the death of Childeric III., was designated the spirit and power of the Franks. Pepin waged war with the Saxons and with the Saracens, who had possessed themselves of the coast of the Mediterranean, which he wrested from them; and the subjugation of the duchy of Aquitaine reunited the empire of the Franks. Pepin also of Austrasia reigned A.D. 752—768; but the splendour of his achievements faded before the superior glory of his son Charles, who extended his power over Italy, except the southern part, then held by the Greek emperors, and over the greater part of Germany. His reign (in conjunction with his brother Carloman, A.D. 768—771; alone, 771-814) was distinguished by the attention which he paid to the revival of letters. [CHARLEMAGNE] But the fabric of empire which he had raised fell to pieces under the less vigorous sway of his son Charles, who reigned A.D. 814-43.

In the confused history of the Carolingian princes, successors of Charles, it is difficult to trace the events which belong to France, or to separate its annals from those of Italy and Germany. [CHARLES II., Le Chauve; CHARLES III., Le Grand; CHARLES II., Le Chauve; LEONARD; LEONARD; LEONARD AND LEONARD; HUGUES CEP; Le Grand.]

The divisions of the Frankish empire took place; and the wars of rival princes, and the degeneracy of the descendants of Charlemagne deluged upon France a prey to the ravages of the Normans or Normans, who acquired possession as a fief of the crown, by cession from Charles le Simple (A.D. 911), of the territory subsequently known as the Duchy of Normandy. The governors of provinces established hereditary authority over cities, and duties of protection from the government, defined in wealth and population, and in many cases lost their municipal rights and privileges; the number of serfs or villeins increased, and the mechanic arts were exercised by freedmen. The power of the great lords, the Counts of France, Duke of Normandy, was so much increased, that the last Carolingian kings, and on the death of Louis V. the Carolingian dynasty expired, and a new family was called to a sovereignty little more than nominal, in the person of Hugues Capet, son of Hugues le Grand, who was elected by his army at Reims A.D. 987.

From the time of Hugues Capet the history of France is less involved: the crown descended with tolerable regularity to the son or other successor of each deceased king, and the divisions and reunions of the parts of the kingdom were ceased. The kingly power was indeed feeble; but it gradually acquired strength, and the royal domain (as distinguished from the domains of the great feudal lords) was progressively enlarged by the conquest, forfeiture, inheritance, or acquisition by other means of the greater fiefs.

The following chronological table of the kings marks the principal extensions or diminutions both of the royal domains and of the kingdom at large; and those changes which form the characteristics of the periods in which they occur are recorded in the corresponding articles on the several kings. [CHARLES; PHILIPPE; LOUIS; &c.]

(987.) HUGUES CAPEP, son of Hugues le Grand, count of Paris.

The condition of the kingdom at the ascension of Hugues Capet is thus described by Simondi: 'We have designated two long periods of the history of the French by the names of the two races of kings, the Merovingsians and the Carolingians, who first held the government of France. A third period begins with the ascension of Hugues Capet at Reims, the 3rd July, 987; a period which, without impropriety, take its name from the new race of the Capetians: it is a period in which royalty was, as it were, ambiguised in France, in which the bond of society was broken, in which the nation was in a state of partial indecision, and in which the government was in a state of decline. The power of the kingly dynasty waned; the fiefs were divided. The feudal system was adopted, with the object of obtaining consistency and extension by custom, and the only system recognised by the numerous potentiats who divided the provinces among themselves. It held with them the place of the social bond of the monarchical and legislative power. The accession of Hugues however increased the power and domain of the crown by the addition of that domain which he had possessed while yet a subject. He was duke of France, count of Paris and Orléans, and abbot of several religious houses. He was the chief supporter of his father under him by the feudal tenure; and he had the support of the duke of Burgundy, his brother, and of the Duke of Normandy, his brother-in-law. Yet he was not acknowledged as king in Guienne till A.D. 990; and Limousin did not acknowledge his right till the reign of his successor.

Those two nobles, the dukes of Burgundy and Normandy, the latter especially, were among the most powerful of the French lords: and of the rest the principal were, the count of Champagne, the count of Vermanon, the count of Blois, and the count of Poitou. The counties of Blois, elevated them to a degree of consideration which they had not previously possessed, the count of Flanders, the count of Anjou, the count of Poitou and duke of Aquitaine, the count of Toulouse; and, though at a lower rank, the county of Champagne, the county of Blois, and the county of Languedoc, which comprised the six paramount fiefdoms, who afterwards became exalted to the rank of dukes. Of those the fiefs of France, were, the dukes of Bourgogne, Normandie, and Aquitaine, the counts of Flanders, Champagne, and
The vassals of Hugues, as count of Paris and Orléans, made such approaches to independence, that, at his death, the authority of his successor extended little beyond the walls of Paris and Orléans.

(996.) Robert, son of Hugues Capet, born A.D. 970.

(1031.) Henri II, son of Robert, born A.D. 1005.

(1014.) Guillaume, son of Henri II, born A.D. 1025.

The power of the first four Capetian kings was very small, and the kingdom over which their nominal sovereignty extended was not co-extensive with modern France; Lorraine, Transjurane Bourgogne, and Provence were subject to the imperial power. Their reigns were but the rising of the rise of chivalry. The reign of Philippe I. was marked by the conquest of England by William of Normandie. The communes or municipalities of France originated in leagues of the inhabitants of towns for defence against the feudal oppressions of the nobles, and were perhaps the germ of what was afterwards ascribed to the reign of his successor. Philippe was engaged repeatedly in hostilities with the Anglo-Norman kings, William I. and William II. The first crusade took place in Philippe’s reign, and by exhausting the power of the nobles prepared for the emerging of the regular authority from its depressed condition.


The reign comprehends an important period in the history of the French, whether by the progress of the people in the communes, the rights of which had scarcely received at this epoch their first legal sanction; or by the progress, not less marked, of the central authority in the power of the crown, which, instead of remaining unimpaired by the progress of feudalism, was beginning really to make itself felt from the Meuse to the Pyrenees; or, lastly, by the development in the same interval of the feudal system. This system profiting by the progress of intelligence and the study of other systems of legislation, assumed a new vigour, and was destined no longer to dispute with it. The activity of Louis vindicated his authority in his own domains, which had by this time been considerably extended, and enabled him to struggle with the Anglo-Norman and other great princes of his kingdom, and to drive out of the same.[1327.]


The kingdom carried on the policy of his father, of establishing his authority in his own domains. He married Elinor of Guienne, from whom he was afterwards divorced. She subsequently married Henry Plantagenet, afterwards Henry II. of England: this marriage made the power of Henry superior to that of Louis: he had Normandie, Anjou, Maine, Touraine, Poitou, Limousin, Angoumois, Saintonge, Berri, Maine, and Guienne, and in his quarrels with Becket and with his sons prevented his availing himself of his superiority. Louis Le Jeune was personally engaged in the second Crusade, but he met with failure.


The predominance of the Anglo-Norman power united the other great vassals of Philippe more closely in alliance with the crown; and the exhaustion of the Anglo-Norman forces, which extended from the Pyrenees to the Black Sea, enabled Philippe to raise the power of the crown above that of his puissant vassals. Philippe displayed considerable warlike activity: he was engaged in the third crusade 1189—91, in conjunction with Richard Cœur de Lion, and in hostilities with Richard and John, and with the emperor Otho, whom he defeated at Bouvines, near Lille, A.D. 1214. He united Normandie, Maine, Anjou, Touraine, and Beauce; he gained the crown of the emperor; in the most of the campaigns of the south of France, and in the Partition of the south of France, and in the Partition of the south of France; and consolidated the regal power by substituting constitutional forms for individual caprice. This reign was marked by the blood-stained Crusades against the Albigenses[1327.], and the south of France, which weakened the power of the counts of Toulouse who protected the Albigenses. France, in its present extent, was at this time divided between four sovereign princes—the king of France; the Emperor, who held the provinces of the east and south-east; the king of England, and the king of Aragon, who had considerable territories near the Pyrenees and the Mediterranean.

(1223.) Louis VIII., Cœur de Lion, son of Philippe Auguste, born A.D. 1187.

Louis conquered Poitou, and engaged in the crusade against the Albigenses.

(1226.) Louis IX. (St. Louis), son of Louis VIII., born A.D. 1226.

(1270.) Philippe III. le Hardi, son of St. Louis, born A.D. 1245.

(1285.) Philippe IV., le Bel, son of Philippe le Hardi, born A.D. 1268.

(1314.) Louis X., le Hutin, son of Philippe le Bel, born A.D. 1295.

(1316.) Jean I., a posthumous son of Louis Hutin, lived only three or four days.

(1316.) Philippe V., le Long, son of Philippe le Bel, born A.D. 1294.

The accession of Philippe established the Salic law: he was preferred to the daughter and heiress of his elder brother, Louis le Hutin.

(1322.) Charles IV., le Bel, third son of Philippe le Bel, born A.D. 1292.

The direct line of the Capetian kings ended with Charles IV.

The reign of St. Louis, one of the most equitable and virtuous of princes, and the reigns of his successors, some of them as remarkable for the opposite qualities, are marked through the considerable power of the law, or distinguishing from that of arms. This beneficial change was however accompanied under the successors of Louis with the most revolting acts of injustice under the forms of law. Many of the nobles were despoiled of their fiefs; the order of the Templars which held in the hands of the crown the Jews and Lombards grievously oppressed; and trade ruined by the shaming of the coinage. Persecution assumed a more systematic form by the establishment of the inquisition at Toulouse. In this period the greater part of Languedoc was added to the dominions of the crown, which were considerably augmented in other places.

COLLATERAL BRANCH OF VALOIS.

(1228.) Philippe V., de Valois, born A.D. 1293., grandson of Philippe le Hardi, by his third wife, daughter of Charles of Valois.

(1350.) Jean II., le Bon, son of Philippe de Valois, born A.D. 1319.

(1364.) Charles V., le Sage, son of Jean II. le Bon, born A.D. 1357.

The reigns of these three kings are marked by the wars of the English in France under Edward III., who claimed the throne of France in the right of his mother, and whose son the Black Prince. The French were defeated in the great battles of Sluys (naval) A.D. 1340, Crécy, A.D. 1346, and Poitiers 1356. But the fury of the English was checked by the death of his son, who had at one time received the cession of a large territory in the south-west of France, under the title of the principality of Aquitaine [Bordeaux], caused the downfall of the English power, and tended ultimately to the extention of the domains of the French crown.

(1380.) Charles VI., le Bien Aimé, son of Charles le Sage, born A.D. 1368.

(1422.) Charles VII., le Victorieux, son of Charles VI., born A.D. 1403.

The reigns of these two kings were marked by another desperate struggle with the English under Henry V. and his successor Henry VI. At one time the success of the English was so decided that Henry V. was crowned at Rheims as king of France to succeed on the death of Charles V.; but the perseverance and spirit of the French ultimately triumphed, and of all their splendid domains in France the English monarchs retained only Cahus. This was a period of the decay of foreign invasion, but of civil disjunction, and of the most frightful massacres and assassinations. The dukes of Bourgogne, who descended from a younger son of Jean II., were acquiring a vast territory and great power.

Charles VII. was the first to substitute a standing army for the military service of the feudal system. Upon the death of Charles le Téméraire, duke of Bourgogne, he seized a portion of his inheritance [Bourgon]. The domain of the crown was now become

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very extensive, though parts of Perigord in the north, Bretagne in the west, several parts of Gascony, the southern districts of the Orleanais, and several districts of the centre were not included. (1483.) CHARLES VIII, son of Louis XI, born a.d. 1470. In him ended the direct succession of the house of Valois.

BRANCH OF VALEO ORLEANS.

(1498.) LOUIS XII., Le Père du Peuple, born 1462, descended from a younger son of Charles V., Le Sage. (1547.) HENRI II., son of Francis I., born a.d. 1519. In this reign the French reorganized Calais and its territory, the last relic of the English possessions in France. (1530.) FRANCOIS II., eldest son of Henri II., born a.d. 1554. (1560.) CHARLES IX., second son of Henri II., born a.d. 1550. (1574.) HENRI III., third son of Henri II., born a.d. 1551. The reigns of the last two princes were distinguished by the religious wars of the Catholics, at the head of whom were the dukes of Guise, of the family of Lorraine, and the Huguenots, under the Comte de Condé and the Grand Condé (COLIGNY), afterwards under Henri of Navarre.

The dreadful massacre of St. Barthélemy [BARTHOLOMEW MASSACRE, THE ST.] was perpetrated by the Catholics who formed the celebrated Confederation of the League, at the behest of the dukes of Guise and of Gaston, who had previously supported the Catholics, was driven by the fear of this powerful and ambitious family to an alliance with the protestants, and Henri III. perished by the hand of a Catholic assassin a.d. 1589. In him ended the direct succession of the branch of Valois Angoulême.

BRANCH OF VALEO BOURBON.

(1589.) HENRI IV., Le Grand, born a.d. 1553, descended from Robert, count of Clermont, younger son of St. Louis, and brother of Philippe III., Le Hardi. In the reign of Henri IV. the resources of France were so far developed that the country began to assume the eminence which it possessed by reason of its population, and social improvement entitled it. A farer prospect seemed to be opening to the rulers of that country. The earlier kings had to struggle with the spirit and the institutions of feudalism; and when, at the close of the direction of Henri IV., the Catholic faith, rest of peace over the armed violence of feudalism seemed to be gaining consistency and strength, the accession of the house of Valois brought on the struggle between the kings of France and England for the right and possession of the crown. The excesses of the distasted soldiery, the struggles of the contending factions (the Bourguignons and the Armagnacs), and the rising of the commons of Paris and of the peasantry or Jacquerie, as they were termed, were added to the ravages of the enemy; and after more than a century, the conqueror in the almost extermination of England, the kings of France had to watch or struggle with rivals of almost equal strength in the dukes of Bourgogne, and the other nobles whose power, the result of the feudal system, still survived when the spirit of the system was gone. The reviving strength of the crown and the kingdom under Charles VIII, Louis XII., and Francis I., was repressed by the rising power of Spain and the ascendency of the imperial house of Austria, and exhausted by the unsuccessful attempts made to gain possession of Italy. Then came the ascendency of the house of Lorraine, and the wars of religion which desolated France for thirty years. At length however the exhaustion of the Lorraine party, or 'The League,' and the opportune concert of Henri IV., the younger son of Charles IX., and of Prince Henry, now on the throne of Portugal, of which the duchy of Braganza, with the island of Madeira, was a part of the inheritance of the house of Braganza, restored hope and energy to the French. The French frontier was now advanced to the Pyrenees, except on the side of Roussillon, which alone remained to the Spaniards of their possessions in Languedoc, and the districts such as the Durance and the Arve, and the Auvergne, over which any of the nobility retained territorial sovereignty, were of little importance when compared with the royal domain, now augmented by Bearn, and the other portions of Henri's patrimony. The generous disposition and popular manners of Henri IV. made him the father of the people, and his wisdom of Sully, his chief minister, promoted the prosperity and husbanded the resources of the country. Henri granted to the Protestants the enjoyment of many important rights and privileges by the edict of Nantes, a.d. 1568, and was more desirous of improving the condition of his people than of extending his frontier by foreign conquest.

(1610.) LOUIS XIII., Le Jube, son of Henri IV., Le Grand, born a.d. 1601. In this reign, the minister of this prince, had in view to crush the nobility, to humble the Protestants, and to set bounds to the power of the house of Austria. His attempts to humble the Protestants led to a renewal of the religious wars; the duke of Rohan and his brother, the prince of Soubise, were at the head of the Protestant party, but their talents were exerted without success: the court triumphed, and the Protestants lost the towns which they held as securities: the edict of Nantes was not however revoked. To abase the house of Austria, Richelieu supposed the expedient of opening 'the mouth of the Canal of War;' but however his talents may have animated and directed the allies, the French armies obtained little distinction until the next reign.


The minority of this prince was marked by the dissensions and hostilities of the courtiers and powerful nobles, and by the splendid success of the French armies under the prince of Condé and the marshal Turenne. The dissensions of the nobles so weakened their power, that the king was enabled to assume and exercise a more despotic power than any of his predecessors had possessed. The nobility were reduced to be the mere dependents on the court: their titles descended to all their children, and a noble held his position purely upon the monarch's pleasure, and without a document of possession, a degradation: the country was burdened by the expenses of a court which had such a body of retainers, and the privileges and exemptions from taxation, which the nobility possessed, and other relics of the feudal system were among the principal causes of the French Revolution. The despotism of Louis XIV. then, however splendid in appearance, prepared the way for the overthrow of the crown in the person of his descendant, next but one to himself in the possession of the throne.

The early history of the French in this reign were splendid, except near the close, when the arms of the coalition against France, under the guidance of Marlborough and Eugene, gained the ascendant. The boundaries of France were however considerably enlarged in this and the preceding reigns by the addition of Roussillon, Artois, part of Flanders, Franche Comté, and Alsace: the boundaries of France thus became nearly what they are at present. The manufactures and trade of France made considerable progress in this reign under the able management of Colbert.
principal accessions to or diminutions of the territory of France. Among the more immediate causes of the Revolution were the financial embarrassments of the government, and the enthusiasm for liberty inspired by the alliance of France with the United States, in the struggle of the latter for independence against the power of Great Britain.

1787. The Meeting of the Notables, a number of persons from different parts of the kingdom, chiefly selected by the king. The Notables were dissolved the same year.

1789. The States General, the ancient assembly of the kingdom, consisting of the deputies of the nobles, clergy, and of the Tiers État (third estate) or commons, assembled. The deputies of the Tiers État, with such deputies of the clergy as chose to join them, (none of those of the nobility accepted the invitation) voted themselves the supreme legislative body, under the title of the National Assembly.

In this year the division of the kingdom into departments was introduced.

1790. Hereditary nobility and titles of nobility were abolished.

1791. A new constitution was promulgated by the Assembly;—France was declared a limited monarchy.

1792. The Legislative or National Assembly assembled according to the new constitution.

1793. The royal authority was suspended by the National Assembly: the nation was invited to elect a national convention, and determine on the form of the government. The convention assembled and proclaimed a republic.

1793. Louis XVI. was executed: the nominal reign of his son Louis XVII. (born 1786) commenced.

1793. The constitution of the republic was completed; but it was determined that the Convention should continue in power till the end of the war.

1795. A new constitution was substituted for that of 1793, which was found to be impracticable. The executive power was confided to a body of five, called the Directory. Two legislative bodies, the Council of Ancients and the Council of Five Hundred, were constituted. The nominal king, Louis XVII. died.

1799. The Constitution was remodelled: the Directory was overthrown: consuls for a term of years were appointed; Bona parte, Sicyes, and Ducos, provisionally: then Bonaparte, Cambacères, and Le Brun.

1802. Consul for life were appointed—Bona parte, Cam bacères, and Le Brun. Napoleon assumed the sovereign power as Emperor.

During these changes the boundaries of France were continually extending.

The chief acquisitions, with the dates at which they were made, and the departments into which they were formed, are as follow:—

When acquired. Depar tments and Capital.


1796. Principality of Montbéliard.—incorporated with Doubs.

1798. Le Comtat d’Avignon and Le Comtat Venais. This acquisition is still retained.

1802. Consula for life were appointed—Bona parte, Cam bacères, and Le Brun.

1804. Napoléon assumed the sovereign power as Emperor.

1801. The Austrian Netherlands and all that part of Germany which is on the left bank of the Rhine.

1801. Porencruiy (Switzerland)—incorporated with Haut Rhin.


1815. Part of the States of the Church and other districts of the Papal States in Italy.

But these acquisitions were lost upon the overthrow of Napoleon, with the few exceptions which we have marked at the close of our enumeration.

(1814.) Louis XVIII., brother of Louis XVI., born a.d. 1755.

The Charter was granted in 1814 by this king.

(1824.) Charles X., brother of Louis XVIII., born a.d. 1757.

The second Revolution broke out a.d. 1830.

COLLATERAL BRANCH OF ORLEANS.

1830. Louis Philipe, previously duke of Orleans, descended from a younger brother of Louis XIV., born a.d. 1723.

State of France before the Revolution.—The population of France previously to the Revolution was politically divided into three classes, called États, or states—the clergy, the nobility, and the commons, or tiers État.

The clergy, as a political body, was divided into the old French clergy, and the foreign, that is, those belonging to the provinces which had been united with France since the reign of Henry the Second. The income of the whole clerical body was estimated by Neckar, in his 'Administration des Finances,' at 130 millions of livres, and the proportion of their real property to that of the other landowners as 1 to 54. The share of the parish clergy in this income was estimated by the same author at from 40 to 45 millions of livres. The abbies, except those which were the chief seats of some monastic orders, as, for instance, the Grande Chartreuse, near Grenoble, and the Great Cisterian Convent at Citeaux, near Dijon, were in the gift of the king, and part of them were granted to real ecclesiastics and part to the Abbé commendataries. Of these latter there were 225, and some of them very rich. The Abbé commendat-
nosses received the third part of the income, but were under no obligation either to reside in or to submit to the regulations of the convent, the duties of which devolved on the poor. These ecclesiastical benefices were employed as sustenance for the younger sons of the nobility, and only the possesses of the priors and canons. Among these were lastly the despotic clergymen who were not among the privileged classes. The number of regular abbeys or monastic establishments was 365, of which 113 were convents and 252 monasteries. The contribution of the clergy to the general revenue of the monarchy was the first established under Francis I., and called from the first revising commission, Pouc'h, Dessein Paroisse. But as this contribution, as compared with the wealth of the clergy, was very small, that body granted regularly every five years these grants of tax-free incomes from their fiefs or the lands which were allowed 160,000 livres; and occasionally absolved entire from the taille. These latter however were not donations, but only loans without interest, which were repaid after a long time. The so-called foreign clergy were in some provinces subject to the general taxes. There was a good deal of relaxation of discipline and corruption of manners among the clergy, which, united with the anti-religious spirit which at that time pervaded all France, had rendered the clergy an object of hostility to the other classes of society. A few of these, particularly among the parish clergy, exhibited the most perfect examples of the Christian virtues, and bore the severe trials to which they were exposed by the French Revolution with a fortitude worthy of their profession, although sometimes not without a tinge of fanaticism and superstition.

The nobility of France was quite differently constituted from that of other countries, where the eldest son inherited the title of his father, and the other children fell into the general category of second or younger sons, and were not considered as the great mass of the population. The French noblesse was exceedingly numerous, for not only all the children of a noble belonged to the class of their father, but that class was continually increased by the creation of new nobles. These creations were not confined to certain classes of the society, which confined nobility, either simply by being obtained, or by being held for a space of twenty years. Almost all these places were acquired by purchase. Besides, there were frequent creations of nobles by royal patent. The nobility possessed great privileges: they were exempted from the land-tax taille, the military service, the statute labor for the maintenance of roads (corvée), and many other duties and taxes. They were subject, it is true, to the capitation tax; but this tax, when compared with the land-tax, was inconsiderable. The nobility, the clergy, and some orders, as, for instance, that of the knights of Malta and of St. Lazarus, possessed by far the greatest part of the landed property in France, and enjoyed in their domains many feudal rights, some of which were not abrogated until one hundred years after the restoration, and an exclusive right to keep game and rabbits, were the source of great taxation to the peasants. Personal servitude was finally abolished in many parts of France only a few years before the Revolution. Although the nobility enjoyed all the above-mentioned privileges in body, there was a great difference between the old and new noblesse, the latter being held in a very slight estimation by the former. Only such nobles as could prove that their family had been ennobled for at least two centuries, had the distinction of the order.

The highest class, as we might suppose, consisted of those whose origin was lost in the darkness of ages. Only those who belonged to the old noblesse had access to the court as a birthright; and even in the reign of Louis XVI. there were not more than 10,000 individuals possessing these arch-ecclesiastical benefices exclusively reserved for the younger sons of nobles. Besides the great mass of untitled noblesse, there were dukes, marquesses, counts, viscounts, and barons; but except those who bore the title of these latter classes, we got essentially among these the most special privileges. Only the dukes had peculiar privileges at court, of which the principal was that their wives were allowed to sit on a tavouret in the presence of the queen.

The third class of the inhabitants of France comprehended the whole population, except the nobility and clergy, and consisted somewhat more than 2 parts of the whole. These were the peasants, who were divided into three main classes: the tiers estat and its classes. "Qu'est-ce que la tiers estat?" "Tout! Qu'a-t-il déjà existé auparavant? Rien! Que demandes-tu à lire? Quelque chose!" This definition contains all the secret of the French Revolution. The tiers estat included before the Revolution all the inhabitants, from the richest merchant and the most eminent scholar, to the poorest peasant and the meanest artisan. The lower part of the tiers estat was crushed by the burden of a most infamous taxation, the weight of which pressed almost equally on everyone, and was the most intolerable of the oppressions of the landowners or their agents, and by the grossest abuses of the manorial jurisdiction. A consequence of all this was the greatest misery among the people, and a deeply rooted hatred towards the higher classes, which manifested itself in the terrible acts of revenge and bloodshed which accompanied the Revolution in France. While the lower part of the tiers estat was ground down by what we may term physical oppression, the higher part of that class was suffering from a moral degradation. Although the absolute authority of the landlords over the peasants was much diminished before the Revolution, and although, as we have already seen in the case of the clergy and the nobility, the two most natural means towards attaining distinction, were unavailing to a man who had not the advantage of birth, and the road to honours and preferment was closed against him. Even a great number of the new noblesse formed a class distinct from the first, and possessed the same rights with the other nobles, they were virtually prevented from enjoying them by the old families, who carefully excluded the new intruders upon their privileged class from all honours and preferments.

The inherent quality of the direct tax was its directness. The direct taxation consisted—1st, of a land-tax called taille, levied only on the lands belonging to the non-privileged classes; 2nd, the capitation, to which all classes were equally subject; 3rd, a property tax, principally assessed on the clergy, and denominated rente, a family property tax, which, if net income, was called rente; it was afterwards doubled, and called les deux rentes. This tax was augmented by a third vingtaine, which was imposed not as a permanent but only as a war-tax. The nobility were not legally exempt from the above-mentioned taxes, being taxed by their influence they contrived to have it assessed in such a way that they were very slightly affected by it. The whole amount of revenue derived from direct taxation immediately before the Revolution was 210,000,000 of livres, of which the clergy and nobility were exempted, being paid by the great body of the peasants, of whom almost every one paid through the double burden of the taille and the seigneurial taxes, the heavy burthen on the non-privileged classes was military quarters: they were obliged to furnish the soldiers gratuitously not only with provisions, but also with fire, carriages, salt, and washing; and wherever the cavalry was quartered in the country, the inhabitants were also obliged to furnish the horses with forage. This class was also exclusively subject to compulsory military service, and 60,000 men were drawn by lot for the army every year.

The indirect taxes were still more oppressive than the direct, and were almost equally oppressive. They consisted—1st, of customs levied not on goods imported from abroad, but on those which passed from one part of France to another, the country being divided into three main districts: the general, comprising the whole of France, divided, with the exception of the extremes, into six districts: 1. The Provinces Francaises (Bretagne and a part of Poitou), where salt was not taxed, and could be purchased for its market price, about two livres per quintal; 2. The Flanders, comprehending the rest of Poitou, Guienne, and Anverve, where salt was purchased their exemption from the salt monopoly in the reign of Henry II. for 1,700,000 livres. These provinces
supplied themselves from the sea salt-works of Saintonge and Poitou, and although they paid an import duty, they could get the quintal of salt for a price varying from 6 to 10 livres.

3. The Lower Normandie, which produced sea-salt, of which it had formerly given the fourth part to the government, and was called on that account Pays du Quart Bouillon. This district, drawn in a straight line from the coast, raised the price of that commodity to 13 or 15 livres for the quintal.

4. The Pays des Salines, which were furnished from the salt-mines of the interior, and which comprised Alais, Lorraine, Franche Comté, and the districts of Toul, Metz, and Verdun. These districts got salt at the unequal prices of 12, 15, 27, and 36 livres for a quintal.

5. The Pays des Petites Gabelle, or Provence, Languedoc, Lyonais, and Dauphiné, which received salt from the salt-works on the sea-coast, and paid for the quintal of salt variously at 14, 15, 18, or 20 livres, raised the price of that commodity to 13 or 15 livres for the quintal.

6. The Pays des Salines, which were furnished from the salt-mines of the interior, and which comprised Alais, Lorraine, Franche Comté, and the districts of Toul, Metz, and Verdun. These districts got salt at the unequal prices of 12, 15, 27, and 36 livres for a quintal.

A consequence of this oppressive and unequal taxation on salt was a general contraband trade in that indispensable commodity, which could not be put down either by a remonstrance of the provincial committees or by the measures inflicted on the smugglers. There were generally about 1500 individuals in prison for such offences, and a year was considered fortunate when there were no more than 800 persons sent to the galleys for smuggling salt. All these seizures, however, we have no means of knowing how many per cent. of the salt smuggling; for it was calculated that an individual could gain in one hour, by transporting over the frontier of a province two pounds of salt in his pocket, more than a hard-working labourer could earn in a day. The oppression caused by the system of taxation was increased by the custom of farming out the indirect taxes to individuals or companies, who paid the government a stipulated sum, which they endeavoured to get back with a profit from the inhabitants, whom they oppressed in the most unsparring manner.

Besides the above-mentioned taxes, the country suffered greatly by the absurd policy which prohibited the exportation of corn not only from France, but in many cases for one part to another. This restriction was introduced by Colbert as a means of fostering manufactures by ensuring cheap provisions; but what was only a financial error of that statesman became the source of the greatest abuses under his successors. The intendants, without whose permission no corn, not even from the outlying districts, was allowed to be exported, raised the price of corn and resold it at an enormous profit to the government, which endeavoured to maintain an equal price of bread all through the country. It is no wonder that agriculture, so undeveloped is that system. The devastations which often occurred. Targot succeeded in partially abolishing the harriers which obstructed the corn trade, and after the year 1774 it was free, at least in the interior of the country. But agriculture could not he easily raised from its depressed state; and in the regular supply of the metropolis always remained an object of considerable difficulty; it was easy to alarm the inhabitants of Paris with a dearth; a measure which was employed in bringing about the first scenes of horror in the Revolution, and exciting the Parisians to revolt and the massacre of the 10th of August.

The revenue extorted from the people by this system of taxation was squandered in the most profligate manner. The wars of Louis XIV., the splendid edifices erected by him, and the pomp of his magnificent court, although supported by an army of 73,000 men, was at the expense of flattering the national vanity; but the wanton prodigality of Louis XV. and of his favourites, Madame Pompadour and Madame Dubarri, was without the same excuse. It was under the reign of Louis XV. that a new custom was introduced into the public accounts, which became the source of and the pretext for the greatest abuses. We allude to the acquises à comptant, or receipts signed by the king himself for monies received by him: these sums were never actually received by the king; and the receipts were only used as the means of concealing in the official accounts the real employment of the revenues. Louis XVI. was by no means a spendthrift, and the memory of the unfortunate Marie Antoinette has been recently vindicated against the reproach of prodigality; but the habit of raising public money was too deeply fixed in the court and the system of government to be eradicated. The acquises à comptant, or, as they were afterwards called, ordonnances au pourtour, were continued under the reign of Louis XVI. The number of these documents, from 1757 to 1789, amounted, from 1779 till 1787, to 860 millions of livres; the whole of which, with the exception of secret service money for foreign affairs, was given in pensions or expended in grants to the court noblesse. These favours were generally bestowed without any discrimination, and the grantees, who could not invent a pretext for asking a grant or a pension, used to propose to sell to the king some property or privilege, for which they received the desired sum. Sixteen millions of livres were expended in two years in paying the salaries of the directors of the concessions of Beaumarchais received for secret services a million livres at once.

The royal power which had been long limited by the feudal institutions gradually became absolute. The meetings of the States-General were suspended in 1614. Some provinces, as Artois, Bretagne, Languedoc, &c., had their provincial states, which were composed of the deputies of the nobility, clergy, and tierce d'État; all their powers however consisted in making the recommendable to the king for taxation, and in assenting to the general revenue which was required of these provinces. This circumstance was the cause of the different systems of taxation in the several provinces, which were particularly injurious by having produced the various customs and systems of taxation. The princes were governed by royal intendants, of whom there were 32 possessed of extensive powers. The municipal institutions, which were flourishing in France during the middle ages, were almost entirely abolished. The privileges of towns were generally either hereditary or acquired by purchase. The towns preserved their ancient institutions by paying to the treasury the sum which would have been derived by the sale of the municipal offices in each city, and elected their magistrates and public functionaries. At Paris the king established the postes de marchands, or chief municipal officer of the town; the city elected 4 aldermen (échevins), and the places of 26 municipal counsellors and of 16 chiefs of quarters of the town were hereditary.

The central administration was conducted by the chancellor of France and the secretaries of state for foreign affairs, war, marine, and the royal household, and the comptroller general or general director of the finances. Each of these functionaries, although not always enjoying the rank of a minister of state, had an important influence in the race for state, had uncontrolled power in his own department. Their orders were issued in the name of the king, and with the royal signature; the king however did not sign himself, but the minister stamped the royal signature and countersigned it. The minister was already or had already, under Louis XVI., the right to give arbitrary orders by which the ordinary course of justice was interfered with, were issued only by the ministers of the royal household. The ministers were not appointed by any written document, but became vested with their powers in a simple invitation from the king to assist at the council of state. They could not be deprived of their places without a formal condonation, and it was therefore almost indispensable to exile a minister from the capital in order to dismiss him. The king himself presided in the council of state, and there were very few who dared to contradict him. There was also a council of dispatches for foreign affairs, a council of finance, and a privy council of war: all the ministers and secretaries of state sat in those councils. There was another council of state composed of conseillers d'État and maîtres des requêtes, in which the chancellor of France or the keeper of the seals, presided. This was a kind of judicial body which decided on appeals from the supreme courts. There was also a tribunal called grand conseil, composed of 30 presidents, 34 counselors, and some other minor functionaries, which decided questions about ecclesiastical benefices, bankruptcy, and various other matters. The chancery, or grande chancellerie, was composed of the chancellor, two grands rapports, two grands auditeurs, and several minor officers. It prepared the appointments to public places, patents of nobility, legitimations, naturalizations, &c. The number of functionaries, high and low, employed in the various branches of administration...
was enormous. Necker states that the number of officers employed only in the collection of the property and lawsuit duties was 236,000.

The inferior courts of justice were the manorial courts, justices seigneuriales. The manorial or seigniorial jurisdiction was divided into the high, middle, and low, the first of which had jurisdiction in criminal cases. An appeal could be made from the royal tribunal to the seigneurial court, but generally it was made to the royal tribunals called baillages and sénechaussées, whose authority extended not only over the royal domains, but also in certain extraordinary cases, called cruces rogas, which were not transferred to the lay courts of appeal over private estates. The tribunals of some large cities were called présidiaux, and were composed of a president and at least six counsellors, who all acquired their places by purchase. The supreme courts of justice were called parlements. They were divided into the great parlements, or parliament de Paris, being the most antient (established in 1302), and having the largest district subject to its jurisdiction, which comprehended almost half of France. It was composed of the first presi
dent, 9 presidents of the grande chambre, 8 presidents of the other 4 chambers, and 116 counsellors. It had attached to it a host of subalterns, procurators, advocates, &c. The nine presidents of the grande chambre were a kind of round cap, which they were generally called sejus
seigneuriales.

The government also frequently interfered with the ordinary course of justice by the lettres de cachets, by which people were arrested, imprisoned, exiled, and sometimes screened from the arm of justice.

There were at Paris, as well as in many parts of France, tribunals for auditing the public accounts, which were called cours de comptes. Other tribunals, called cours des arides, were also set up. The great parlement of Paris enjoyed great popularity, as it constantly took the part of the people against the extortions of the farmers of the revenue and treasury officers. All the places in the above-mentioned tribunals were purchased like those in the parliament.

For further particulars about the state of France before the Revolution, see Considérations sur le Gouvernement de la France, par le Marquis D'Argens; and Histoire des Français des divers États aux Cinq derniers Siècles, par M. V. l'abbé de la Feuillé, et Histoire de la France pendant le 18ème Siècle, par Lacretelle.

Historical Sketch of the French Language and Literature. First period—from the establishment of the French monarchy to Francis I. The dominion established in Gaul by the Romans ultimately destroyed the ancient languages of the country. It is also probable that the Greek colony of Masalia (Marseilles), established about six centuries before the Christian era, did not use the Latin, but some separation of the use of the Greek tongue. No monuments of the poetry of the Celts of Gaul have reached us, although we may conjecture that they had one similar to that of the Scottish Gaels. Under the Roman dominion Latin became the general language of the provinces, and it was acknowledged by many languages that tongue, such as Atonius, Sidonius Appollinaris, Savius, Sulpicius Severus, &c., &c.

The invasion and settlement of Germanic nations in Gaul produced a corruption of the Latin by the admixture of foreign idioms, but the influence of the Vandal and the Visigoths was not very lasting, and the Franks who established themselves in the southern provinces, was however, in respect to language, not considerable, and their northern idiom was soon absorbed by the Latin. Yet this Latin, which, except among the educated, had probably never been pronounced in any correct manner, was somewhat debased, and became still more corrupted by the admixture of a foreign race, and degenerated into a peculiar idiom called the Romano, or Lingua Romana Rustica. This idiom became not only the language of France, but of many other parts of southern Europe, which the Franks called, where they established their dominion on the ruins of the Roman empire.

The conquest of Gaul by the Franks hastened the corruption of the Latin tongue. The conquerors however seem for a long time to have preserved their native tongue; as the Franks were divided into several confederations of different idioms, they continued to speak their separate languages, and to translate their homilies into two languages, the Roman and the Teutonic, or German. The same injunction was repeated at the council of Arles in 831.

It appears that the separation of the German from the Roman language began in the division of the Francian empire among the sons of Louis the Debonnaire, when the German part of it became separated from France. The most antient monument of the French Romano is the oath of Louis the Germanic, son of Louis the Debonnaire, on the occasion of a treaty with his brother Charles the Bald of France, concluded at Strasbourg in 847. The German monarch took the oath in Roman, and the French in Teutonic.

The Romano of France had a variety of idioms, according to the provinces where the influence of the invaders was more or less exercised. These were however but shades, and the language of France in general could be divided into two principal idioms, separated by the Loire. These were long, and according to the time, upon the languages spoken in the langue d' Oc, and the northern the langue d' Oit ou d'Au.

The langue d' Oe, or as it was frequently called the Occitanian language, is better known under the appellation of the Provençal, as the rulers of Provence united at the beginning of the twelfth century under their dominion the greatest part of southern France.

The Provençal language was largely formed by a modification of Latin words, than by the admixture of foreign words and idioms. Many favourable circumstances united the cities of these countries to promote the early development of a poetical literature in the Occitanian language. The poetry of Provence was not like the northern,
of a melancholy and meditative character, but rather of a sprightly and animated tone; and it bore the appropriate name of the merry science, Gayia Cyntea. It was cultivated by the Troubadours, who spread its glory over all Europe. [Thomas Musset, (Romans de l'Éducation et de l'Amour des Normans et des Anciens Gaulois,) who has introduced the romance of chivalry. This kind of composition was commenced by the French in the twelfth century, and its origin was founded on facts as disfigured by the most extravagant fictions. Robert Wace, an Englishman educated in Normandy, who lived at the court of Eleanor of Aquitaine, mother of Richard Coeur de Lion, wrote the Brut d'Angleterre about 1170, and the name of this author is the origin of the celebrated Roman de Rou. Many other romances were written about that time. Their principal theme was King Arthur, and his Knights of the Round Table. The exploits of Charlemagne and the Crusaders are also the subject of many romances, and some of them are founded on ancient history, for instance the romance of 'Troy,' written about 1170, by Bénoit St. More; and the celebrated romance of 'Alexander,' written in the beginning of the thirteenth century, and the verses of twelve syllables which are still used by modern French writers. (Corps d'Extraits de Romans de la Chevalerie, par Tressan; Dunlop's History of Fiction, and Huet, de l'Origine des Romans.)

The poets who wrote in the Langue d'Oüi were called Trouvères, and like their namesakes of Provence, the Troubadours, reckoned among their body several persons of high rank, such as Thibault, count of Champagne, and king of Navarre (1201-53), who imitated with great success the poems of Provence. But they were written in 1742 at Paris, under the title 'Poesies du Roi de Navarre,' 2nd edit. 1824. Another kind of poetry which belongs to this period is the Fabliaux, or tales, which are partly of origin, and were imported by the Crusaders into Europe. The Fabliaux were written in a manner entirely in verse and prose. They often contain a great deal of wit and fun, but are also frequently disfigured by a coarse licentiousness. The poets of other countries have borrowed from them, and Boccaccio has largely drawn from this source. A French imitation of these original tales of thieves, created by the invention of the Royal Library, was published by Barbazan in 1756, 3 vols.; and a new edition of the same collection in 4 vols. by Meun, 1808, and in 2 vols. 1822. The most entertaining of these Fabliaux were translated into modern French by Raynouard in 1823 under the title of 'Fabliaux, ou Contes du 12me et 13me Siècle'; a new edition by Raynouard appeared in 1829. The persecution of the Albigenses, whose tenets were embraced by many of the Troubadours, plunged the south of France into such a religious commotion, and destroyed the literature of the Troubadours, who had spread the glory of the language of Provence disappeared for ever, and the language itself sunk to the condition of a patois, or country dialect. Divided into many branches, it was also sometimes rather coarse in expression, and is the idiom of a part of western Spain, extending from Figueras to Murcia, as well as of the populations of Saragossa and the Balearic Islands; but in all those countries the educated classes have adopted the Castilian, Italian, and French, and the language of the Occitanian language on the one hand, and on the other the establishment of the seat of government for France and of a university at Paris, rendered the northern dialect, or the Langue d'Oüi, the predominant language of all France. The literature of the 13th century gave birth in France to a kind of allegorical and satirical poetry, of which the most remarkable specimens are the Roman de Renart and the Roman de la Rose. The former is the well-known story of 'Reinard the Fox,' and is the same as the German Renart der Fuchs. It is still a matter of discussion among the learned whether the original of this story belongs to the German or the French. This subject was treated by different French authors of that period; by Pierre de St. Cloud about 1295, and by Jaquemart Gisèle de Lille about 1290, in the Roman du Nouvel Renart. The appeoration of Roman was then given to every book written in the Roman or common idiom instead of Latin, which was at that time the learned language. The Roman de la Rose is perhaps the most celebrated French work of the middle ages. It is a kind of didactic allegorical poem, which professes to teach the art of love, and embraceth the most varied subjects. It is a very extraordinary mixture of divinity and profane science. It contains passages of St. Thomas Aquinas and other scholastics. The Roman de la Rose is 15th century, and the most remarkable of the works written in French, and the Roman de la Rose was written in 1290 by Jean de Meun or Mehan. It contains 22,000 verses, and was considered in France for three centuries as a master-piece; and even as late as the beginning of the 17th century there were persons in France who compared with the Dees of the church and the learned parties, one of which attacked it as violently as it was defended by the other. The Roman de la Rose has gone through many editions, the last of which by Meun appeared at Paris, 1814, in 4 vols. There appeared about the same time many other allegorical poems in the same manner; the principal writers were Dans Helymaud, Guillaume DeGuillulé, Jean du Pin, and Gastou Count de Foix. Among the poets of the fourteenth and fifteenth centuries are the following names: Those of the Troubadours and of the Trouvères are: The Roman de la Rose is written by Jean de Meun; the Duke of Orleans (died in 1466), whose poems excel those of his contemporaries in tenderness and depth of feeling. Being taken prisoner at the battle of Azincourt, he remained a captive in England for twenty-five years—a circumstance which will account for the melancholy strain of his poems. They were published at Grenoble in 1590. Clotilde de Surville, whose works were published for the first time in 1803, has produced a good deal of controversy among the critics of France, and may be considered as the greatest poet of that country. Oliver Bassetin (1350-1418) is the most poet of his day, was by profession a fuller in Lower Normandy: the almost unvarying theme of his songs is wine and cider. As he lived in the valley of Vire, called Val or Vaux de Vire, where a mill called Bassetin is still in existence, we may perhaps consider Vire as the origin of the term vaudetille. Alain Chariert, secretary of Charles VI. and Charles VII., was an insipid poet, but he enjoyed in his time a considerable reputation. Villon, a man of low birth, who spent his life with robbers and cut-throats, is the most remarkable poet of this age; he also remembered that many poems under the name of the Legende du Pere Fauteu, or French 'Owl Glass,' Pierre Michault, and Martial DAvouergue. The subject of the FRENCH DRAMA is discussed under ENGLISH DRAMA. Poetic prose preceded composition in France as it did everywhere else. The poetical productions designed for the amusement of the people were written in the vulgar idiom; but prose works, being of a more serious nature, as legends of the saints, chronicles, legal enactments, were written by men engaged in active life, who related what they had themselves experienced and observed; and they therefore felt the necessity of abandoning the language of poetry to express themselves in that of common life. The poetical language of France was fixed by the imitation of the Troubadours, remained stationary for several centuries, while the common language advanced with the progress of the national civilization. This circumstance established a considerable difference between the poetical and prose language, a division which greatly affected the fact of romances which were originally written in verse being afterwards frequently reduced to prose. For the same reason too the prose of the thirteenth century is nearer to the present French than the poetry of the fifteenth. The characteristics of these old memoirs of our national
with piety and a ceremonious courtesy. The first of these
memoir-writers was Geoffroy de Ville Hardouin, who left
a remarkable description of the capture of Constantinople
by the French and the Venetians, in which he had himself
a share. He was surprised by Jean de Joinville, secretary
of the French king Charles V, who had accompanied St. Louis in his first cru-
sade, 1248. He describes the events of that crusade with
great talent in his 'Histoire de St. Louis.' Christiane de
Pisani, daughter of the astrologer of the court of Charles V,
wrote her memoirs about 1480. Olivier de la Marche de-
scribed under the reign of Louis XI, who had befriended
him during the troubles under Charles VII.

The best historian of France during the middle ages is
Philippe de Comines, and the most entertaining is Pru-
sart. Guizot has published an excellent collection of
French memoirs, 'Collection des Mémoires relatifs à l'Histoire de France depuis le Régne de Philippe Auguste jusqu'en Commencement du 17e Siècle' (First Series, 52 vols., Paris, 1819). A continuation of Guizot's collection was published by Petitot under the title 'Collection complète de Mémoires relatifs à l'Histoire de France depuis le Régne de Philippe Auguste jusqu'en Commencement du 17e Siècle' (First Series, 29 vols., Paris, 1823). The second series of this collection appeared in 56 vols., Paris, 1820, under the title 'Collection des Mémoires relatifs à l'Histoire de France depuis l'Avènement de Henri IV jusqu'à la Paix de Paris conclue en 1660.' Both these collections were completed by the chronicles published by Buech, in 46 vols., Paris, 1824, under the title 'Collection des Chroniques nationales Françaises écrites en Langue vulgaire du 13e au 16e Siècle.'

Period 2nd, from Francis I. to Louis XIV. (1515-1661). France, as we have seen, has the merit of being truly national; it bears the stamp of the French character, and gives an image of the civilization of those times. It certainly contained the seeds of a great development; and had the French writers of the sixteenth century been imbued with the true spirit of their country, they would have been really a national one, and something very different from what it is now. Under Francis I, the study of the Greek and Roman authors began to spread in France, and the French writers, dazzled with the novelty of the materials of their art, despised the works of their forfathers and attached themselves to the imitation of the ancients. The national re-col-
lections, as well as the ideas introduced by Christianity, were replaced by the history and mythology of ancient Rome and Greece; and thus arose the so-called modern Classic school—which, instead of imitating the an-
cients, derived its materials from national elements, has been designated by the appellation of Romanic. Besides a slavish imitation of the ancients—which in fact was a false imitation of the ancients—the greatest corruption of the French literature under Francis I, but produced its most degrading effects under Louis XIV.: we mean that degrading flattery manifested more particularly by the poets towards the court and the great ones of the time, which probably arose from the base adulatons of the writers of the Augustan age. Until the time of Louis XIV, this new kind of literature encoun-
tered some resistance from the national opinion and even from some writers; and the political and religious struggle which disturbed France at that period—1559-1643—had its counterpart in the literature of the same time.

Among the poets of this period is Francis I, who, not
withstanding his numerous faults, possessed the un\doubled merit of promoting the literature of his country. He wrote: 'Aduersus duos et tres virgines,' and 'De cupido
et de avide,' with no mean degree of grace; of the
sister 'Ménippé,' which he wrote in conjunction with
the learned lawyer Rapin against the Ligue. French

poetry began to be purified from the admixture of Gra-
vianisms and Latinisms, with which the school of Ronsard, and par-
ticularly that of Boileau, Jesus Burel, De Roches, Jean Bertaut, and Desportes. But the merit of
creating a new epoch in French poetry, particularly in
improving its versification, undoubtedly belongs to Mo-
herbe, of whom Boileau says with justice,—

"Robin, Milherbe viat. et le premier en France
Pour mettre encore des vers en grâce,
Fut honnete et par la verve éclairé.
Fut le premier en France qui en veut
Le vers à faire sans ordre jusqu'alors.
Par sa science et la langue réunis,
Il a su faire du sens le plus doux,
Et de sa langue une langue pleine de sens.
Toutpuissant de ce temps, et censeur de modèle."

Racan (1589-1670), one of the first members of the French Academy, which was founded in 1632 by Richelieu, and a pupil of Malherbe, is still considered to be the best

writer of France. Jean Ogier de Gombault distinguished himself by his witty epigrams; and Pierre de Gabolou of Toulouse (1579-1619) made a successful attempt to

imitate the ancient poets of Provence in their own language.

The productions of France The First brought the

romance of chivalry again into fashion; but it could not

long maintain its ground against the fast-spreading

taste for classical literature and its imitations. The romance of

chivalry however did not disappear altogether, but it lost

its primitive character and degenerated into politico-

historical stories, which although rising in value,

the French queens Catherine and Marie de'Medici introduced

into France a taste for Italian literature, which created the

sonnet and the novel; but except the Heptameron, or novels of the queen of Navarre, few compositions of that kind appeared in France. Under queen Anne of Austria

the knowledge of the language and literature of Spain

was spread in France. The Diana of Montemayor be

came the general favourite, and it was imitated by d'Urfé

in his 'Astres,' 5 vols., Paris, 1610. But the most impor-
tant

from the classical world were the

Theatres. We may refer to this epoch, Balsac and Vincent, who formed the epistolaire style, which the French have brought to

perfection.

Among the historical writers of this period, Thucy
des, although he wrote in Latin, occupies the first place, and

still maintains his reputation. Theodore Agrippa D'au-

bigné wrote a history of his own times. The 'Histoire

du Chevalier Bayard,' and des plusieurs Choses qui sont advenus sous les Réges de Charles VIII, Louis XII, et François Premier de France, written under the title 'Memoirs of Johnville.' Boulain de Monluc, Marshal of France, wrote memoirs of his military career, which attracted

general notice not only in France, but in other countries, and were translated into English by Charles Cotton of Marlborough. Montesquieu, in his 'Persia,' 1721, and in his 'De l'Esprit des Lois,' 1748, made use of the memoirs of Michel de Castelneau which are distinguished by their

manly style. The first queen of Henry IV, Marguerite
d'Alais, described in a very attractive manner the French

court. Brantôme's Memoirs are the most remarkable of

this period. La Popelinière wrote a history of France, and

Theodore Beza a history of the reformed churches. Percey

wrote the life of Henry IV., and Sully left his interesting

memoirs of the events of his time, and the part which he

had taken in them. Henry duke of Rohan (died 1635)

made the French a style by no manner the civil wars in

which he was the principal leader.

Jean Serrau, or Serranus, wrote several historical works,

chiefly relating to the affairs of the French protestants, to

which body he himself belonged. Bolin (Jean) may be

considered the first French writer who wrote a work on

'La République,' had great celebrity, and was translated

into many languages. It was for some time very popular

in this country, and was translated into English: John

Bolin's 'Six Books of a Commonweale, out of the

late English' was translated into English by Richard

Knolles.' London, 1666. Gifford says that it was once read

in our universities.

In concluding our rapid sketch of this period we must

not omit mentioning the moral writers, whose works still enjoy a

high and well-deserved reputation. Montesquieu was one

of the keenest observers of human character. His friend
Etienne de la Boëtie expressed in energetic language the principles of ancient freedom, and his little work, "Discurso de la Servitude Voluntaire," written, as Montaigne says, "in honour of liberty against tyrants," is perhaps the first vindication of political liberty in a modern language. Pierre Charron, also a friend of Montaigne, became celebrated by his "Discours sur l'Amour," a work written in defence of love, and account of some sentimental passages, although the writer showed by his other works that he was an orthodox Roman Catholic clergyman.

Ramus (died in 1572) promoted the study of geometry. Vieta introduced algebra into France: he published his "Canon Mathématique" at Paris, 1579. Albert Girard published in 1569 "Invention Nouvelle en Algèbre." Belon, who travelled in Egypt, Greece, and many parts of Asia, published, in 1555, a description of birds, and introduced the scientific method celebrated by Bacon. Meanwhile Rondellet wrote a description of fishes. Tagant, Ambrose Paré, Jaques Guillemeau, distinguished themselves as surgical writers; Olivier de Serres, Seigneur de Pradel, published numerous works on various branches of rural economy.

This period produced also many eminent scholars whose labours contributed to elucidate the works of the Greek and Latin authors, and to advance the knowledge of antiquity. Amongst these scholars the first place belongs to Guillaume Budé. Budé (died in 1540), who is justly considered as the founder of the study of Greek in his country. Robert and his son Henry Estienne, or Stephens, greatly promoted the knowledge of the Greek and Latin by their lexicographical and grammatical works, of which the novel-writings of Philostorgius was greatly furthered by the learned researches of Scaliger, Cassaunon, Salmassius, &c. The rules of literary composition were laid down about 1500 by Jean Jourdain in his "Jardin de Plaisance et Fleurs de Rhetorique." Libellé published in 1541 his "Art Postique," but his best work on that subject during this period is "De l'Eloquence Française," by bishop Duval, published in the sixteenth century. We may add to the above-mentioned works R. Estienne's "Grammatica Gallica," 1583, and J. Garnier's "Institutio Poetica," 1583.

3. We now come to the age of Louis XIV., which the French call the golden age of their literature, and compare with that of Pericles, Augustus, and the Medici. No doubt much was done during this reign to promote science and literature in France. The language became a universal idiom among the highest ranks of society all over Europe, and the French prose acquired that degree of ease, clearness, and precision which justly entitle it to be considered in those respects as the first language in Europe. The French language furthered the progress of the human mind on this subject during this period is "De l'Eloquence Française," by bishop Duval, published in the sixteenth century. We may add to the above-mentioned works R. Estienne's "Grammatica Gallica," 1583, and J. Garnier's "Institutio Poetica," 1583.

The French drama rose to a high degree of eminence during this period, but we refer to another article on that subject. [ENGLISH DRAMA.]

Among the other poets we may reckon as the most eminent the fabulist LaFontaine, and the epigrammatist Nodier. The Encyclopaedia are rich in these, and the latter are certainly the best specimen of the literary taste of that epoch. The epic poem, which had been unsuccessfully attempted by Ronsard, did not succeed better now. Chapelain's 'Pucelle d'Orleans,' was well defined by a celebrated historian, and the "Histoire de la Conquête de l'Oise." Motte Houillard's translation of the "Iliad" is an exceedingly poor production: 'Alaric, ou Rome vaincue,' by George Sevéri, is now entirely forgotten; and 'Clovis' by St. Sorlin, and 'St. Louis' by Lemoine, are hardly remembered.

Such poetry as requires genuine feeling and a truly poetical imagination could not succeed in this artificial age; and not only all attempts at heroic poetry proved complete failure, but the essays of the lyrical and pastoral kind were not very successful. Madame Deshoulières and Fontenelle wrote eclogues which were once admired, but their shepherds and shepherdesses are nothing more than mirthless imitations; the French are better, though he does not merit the eulogy of Boileau, who says: —"Sages dans l'eclogue enchanter les forêts."

The only lyric poet of this period worth mentioning is J. B. Rousseau. The writers of this age endeavoured to be successful in the new and refined art and an elaborate versification, which gave rise to the light poetry, poésie folâtre, légèr baudets, a kind of composition which rapidly developed itself with the fast-growing corruption of manners among the higher classes in France. The most remarkable works of this period is "Calpurne" (published 1563), a man endowed with a bold poetical imagination, though without taste: he took his subjects from Greek and Roman history, but he worked his classical elements into the form of a romance of chivalry, so that there was nothing new over Greek or Roman except the French names, the characters, situations, and adventures, belonged entirely to knight errantry. Calpurne found an imitator in Mademoiselle de Scudéri, whose novels equalled those of Calpurne only in length. The romance of chivalry embraced enthralling adventures, and was applicable to tales which contained scarcely anything historical except the names of the principal heroes.

Many ladies wrote works of this description, of which those of the Countess Lafaye are still read; those of Madame Camont de la Force, Villieu, &c., are known only to the learned. The scandalous work of Bussy de Rabutin, 'L'histoire Amoureuse de Gaule,' obtained great notoriety. Fairy tales also became very fashionable, of which the first impulses seem to have been given by Calpurne. The poems of Lully, in his "L'Oyé." Fentonel wrote some for the use of his pupil, the duke of Burgundy. Antoine Galland (1646—1757) translated from the Arabic the "Thousand and One Nights," and Petit de la Croix from the Persian the "Thousand and One Days." The fairy tales of Count Hamilton had great vogue. To the literature of this description we must add the novel, the most distinguished writers of which are Sarron and Lesage.

The art of elegant letter-writing, which was introduced by Balzac and Voltaire, became in France an almost indis- pensable accomplishment of well educated persons; and many authors, as well as other eminent persons of this period, have left admirable specimens of the epistolary style. Mme. de Maintenon wrote with remarkable talent, and the letters of Mme. de Praslin are also esteemed among the French classics. The letters of the Countess de Staël (1768—1795) derive their charm from their great ease and complete absence of all pretension. It is very doubtful if the letters published under the name of Ninon de l'Enclos are really written by her. The letters of authors like Fontenelle and those of Fontenelle are, like his eclogues, full of mannerism.

Among the philosophical writers of this period are La Bruyère and the physician Cureau de la Chambre, who wrote two excellent works; 1. "Caractère des Passions," &c., and 2. "L'Art de Vivre." The latter is a charming book, full of witty and biting observations on human life, "Maximes et Reflexions" of the Duke de Rochefoucauld. The eloquence of the pulpit reached its acme in France during this period, and the sermons of Bossuet, Bourdaloue, Pichard, and Masillon, among the Roman Catholics, and of Saurin among the Protestants, are still regarded as...
models of sacred eloquence. Controversy, or polemical
dising, also excited some able writers, there being, in
addition to the subject matter of dispute between the Pro-
testants and Roman Catholics, disputes also among the
parties of Jansenists and Molinists, which divided the
Catholics themselves. The most distinguished writers on
this question were Montesquieu, Voltaire, Rousseau,
and Diderot.

The historical writers are generally more distinguished
by the perfection of their style than by critical skill. The
works of Mestray, though savouring more of a chronicle
than of a history, are characterised by a love of truth and
candor. The 'Dictionnaire de France,' written by St. Ron-
vert, St. Real, Rollin, Bossuet, Basnage, Fleury belong
to this period. Bougan's 'Histoire de Négociations qui ont
précédé le Traité de Westphalie,' as well as his 'Histoire
du traité de Westphalie,' are important for the diplomatical
student. Among the numerous memoirs which, however,
more rare are those of Cardinal de Retz and of the Duke of St.
Simon. Charles du Fresne, Sieur du Cange, greatly con-
tributed, by his learned researches, to the knowledge of
the Byzantine writers and of the middle ages. Jean Fro
do, Villat's knowledge of languages are also much esteemed.

The age of Louis XIV. produced many good metaphy-
sicians, as Descartes, Malebranche, and Gassendi, but the
most acute critic on all subjects was Bayle.

The eighteenth century occupied many distinguished
authors. The chief works are, 'L'Art Poétique,' by Boileau; 'Dialogues sur l'Eloquence,' by Fenelon; 'Traité sur la manière d'enseigner et d'étudier
de belles lettres,' by Rollin; and 'Sur le Choix d'Études,'
by Duc de Saint-Simon.

The Academy of Sciences, founded by Colbert in 1666,
greatly contributed to the progress of mathematics and
natural philosophy in France. The labours of Pascal and
Fermat did something, and Descartes still more to the
progress of mathematical science. Fr. A. de l'Hôpital pub-
lished many valuable works on different branches of
mathematics. Ozanam wrote several elementary mathematical
works, and his treatise on algebra was much valued.
Carré published, in 1706, his 'Théorie de Mesurer les Surfaces et les Volumes,' which contained Catenary Surfaces,
and improvements in the art of fortification, and by his
numerous works on military subjects. The Chevalier Folard
is well known by his works on Tactics. Turenne, who
made a scientific voyage in the East, added considerably to
botanical knowledge and to our general acquaintance with
the countries which he visited.

The corruption of manners which infected France in the
latter part of the reign of Louis XIV. was increased under
the regency of the unprincipled Duke d'Orlans, and per-
vaded the whole country as the end of the prostrate
of Louis XV. The eighteenth century in France, which
was the period when the writers of that period chose to call
the age of philosophy, is characterised by hostility to religion in the
discourse writers, intolerance and superstition in the clergy and
people, and a general absence of the higher considerations
of morality and virtue. There were honourable exceptions,
but this description is on the whole, applicable, particularly
to the higher ranks. The literature of that period is a
faithful mirror of the philosophy of the age.

The principal writer of the eighteenth century, who may
be considered as the representative and the personification of
the age, on which he exercised a most extraordinary
influence, is undoubtedly Voltaire. He was the leader of the
French party of the patriotic writers of France, and an
infallible oracle in literature. His character was waver-
ing and full of contradictions: he alternately displayed
great virtues and vices, but the leading and unalterable
feature of his mind was an excess of vanity, which was fos-
tered by the flattery of kings and princes, his companions
or correspondents. His hatred of Christianity became
fanaticism. Ridicule was the formidable weapon which he
employed with wonderful effect in demolishing absurd
prejudices, and attacking old and sacred principles.

Voltaire's writings varied according to the occasion, from the light 'Raison de'
of a refined courtier to the bitter derision of contempt, which
at times degenerated into low buffoonery. If Voltaire may
be justly termed the Democritus of his age, the application
of his philosophy to human affairs has not been so
just. It is scarcely fair to compare the inestimable
celebrity, J. J. Rousseau, whose influence was scarcely in-
fier to that of Voltaire. Though Rousseau diffused much
error and maintained the most paradoxical opinions, he fell
warmly for the happiness of mankind, whose rights he ad-
voce in the most glowing language, which bears the
stamp of deep conviction. Voltaire too had a noble and
generous feeling for the happiness of mankind, and was
the determined enemy of oppression and injustice, as his
efforts in the case of Calas and Fleury show. Furthermore,
the imprudence of his temper and his uncompromising hostility to what he considered existing
abuses and follies, he seems to have had no other object
than to destroy the social edifice, without constructing
anything better in its place. Rousseau, on the contrary,
was interested in a top political and social order, which
should ensure the happiness of the human race, and hence
his works are still read by philosophic inquirers; while the
witty sayings of Voltaire, directed against an order of
things which he did not even exist, and which he
thought it a duty to ridicule, whether it be a praise or a censure, no one man
more largely contributed, are either forgotten or known
only to those who make literature a pursuit. Next to
Voltaire and Rousseau, the most distinguished writer of
that time is Montesquieu, the author of 'Esprit de
Loix,' whose works have at least the merit of having ren-
dered political science the favourite study of the French.

Among the metaphysical writers we may name, in the
first place, Condillac. The chief propagators of the philo-
sophical school of the eighteenth century, have erected
theories, and have written the most famous treatises of
editors of the French Encyclopedia, of whom the leaders
were Diderot and d'Alembert. Next to them in celebrity is
Helvétius. The name of Holbach has become notorious
by his 'Système de la Nature,' and that of Lamottte by his
works on the 'History of the French Catholics.' Another
Seneque.' The atheistic principles advocated by the two
mentioned writers were not to the taste of Voltaire,
who strenuously maintained pure deism, and received from
the atheistic party in return a share of that ridicule which
he displayed to their writings.

Among the few defenders of revealed religion during this
period we may enumerate the accomplished J. Vernet.

Charles Bonnet, of Geneva, occupies a conspicuous place
among the metaphysicians of his age. His 'Essai sur
la Progression des Lumières' and his 'Essai Analytique sur les Facultés de
l'Amé,' are considered by some as having a tendency to-
wards materialism; but the religious opinions which he
constantly expressed at a time when irreligion was the
fashion, as well as his work 'Sur le Futur des Etres vivants, ou Palingenesie philosophique,' in which he
defended the immortality of the soul and the truth of
Christian revelation, must be considered as decisive of his
real sentiments.

The most distinguished works of Voltaire, who, though careless
in the verification of facts, displayed an unusual degree of
critical acuteness, and the productions of Montesquieu,
have a marked influence on the study of history. The philo-
sophy of history is indeed a creation of the eighteenth
century, and the work of the great historians who operated
for its advancement, their indiscriminate hostility towards
everything which had for ages been considered as true or
sacred, frequently operated most prejudicially to historic
truth. One of the most learned historians of that period
is Malvolio. Charles de Broc, a Genoese, President of the parliament
de Dijon, acquired a well-merited reputation by his various
historical works, which display deep research and a most
diversified erudition. Goguet, in his work 'Recherches sur l'Origine des Loix, &c.,' investigated with great learn-
ning and skill, the customs of the ancients. The customs of
the Britons and Gauls he was regarded as a custom of
Barthélemy, who was really a learned man, must not be measured by his 'Voyage d'Ana-
clarion:' this work, which long enjoyed and still has some
celebrity, may serve as a measure of the spirit in which
ancient and modern antiquities were studied and understood at that time.
Raynal's 'Philosophical History of the Discoveries and Settle-
ments of the Europeans in Africa and America,' also a
work of considerable reputation, does not maintain the
same rank at the present day. De Mehogé published a
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romance. Crevier continued Rollin's Roman history. The historical memoirs of this period are very abundant, and the scenes rather as a picture of the state of mankind than as historical materials. Anville advanced our knowledge of antient geography; and Montfaucon and Caylus did the same for the arts of the antients. Pellerin made valuable researches in numismatics.

Nineteenth century was still less poetical than the age of Louis XIV. The model was Voltaire, and particularly his poetical, or rather versified tales. The most successful of these imitators was Parny, who laboured to surpass his master in licentiousness. Graesser is a writer full of wit and good sense, and invented the word Frasance; and Gilbert, who distinguished himself by his satires and some lyrical pieces, would perhaps have become one of the best poets of France, if he had not been cut off in the prime of life. Madame Du Boccage attempted the task, and succeeded the same author; her son, the Chevalier Boufflers acquired celebrity for his light and witty poems. Bernard, named Le Gentil, on account of his graceful poetry, imitated Ovid in his 'Art d'Aimer.' Leonard and Berquin successfully imitated Gesner's pastoral poetry. Le Franc de Pompignan acquired deserved celebrity for some beautiful lyric poems; and Louis Racine, son of the tragedian, wrote some beautiful poems on religious subjects. Among the other poets of this period we may mention Dorni, Aubert, Colarrete, and Firon.

But a new order of men was now emerging, furnished with the characteristics of the age. Besides those of Voltaire, Rousseau, and Diderot, there is Marmontel, whose 'Contes Moraux' have nothing moral about them but the name, yet are written in an elegant and correct style. The tales of Marmontel, of the Restoration, are all very beautiful. The tales of Bernardin de St. Pierre, and among them his 'Paul et Virginie,' have been translated into most modern languages, and are still read with pleasure. Prevost d'Exiles translated many English novels and brought them into the French language. There are also fertile in licentious novels, the most notorious of which are those of J. de Crebillon. The art of literary composition was treated by Dauvau in his 'Reflections Critiques sur la Poésie et la Peinture;' the Jesuit Andrè published a treatise on the 'System of the Diderot.' Diderot also wrote on the same subject, and under the same title. Batteux is considered one of the first critics of his time, and his works, 'Les Beaux Arts reduits au même Principe,' and 'Cours de Belles Lettres, ou Principes de la Littérature,' are highly appraised both in France and abroad. Marmontel wrote 'Poétique Fransaise,' and 'Éléments de la Littérature.' The most celebrated work of that kind in the eighteenth century is Laharpe's 'Lysée, ou Cours de la Littérature Ancienne et Moderne.'

The mathematical and physical sciences made great progress in France during the eighteenth century. In this general sketch it is sufficient to mention the names of D'Alembert, Lagranges, Monge, La Londe, and Lalande. Chevalier, and others. In the history of the sciences the measurement of the points made in Lapland by Maupertuis, Clairaut, Camus, Lemomier, and Celsius; and by the similar operations in Peru of Condamine, Godin, and Bouguer.

At the head of the naturalists of France in the eighteenth century are Buffon and Charles Bonnet. The latter, though born at Geneva (1729), where he spent his life, belongs to France, as having written in the language of that country. He distinguished himself by his researches on the use of leaves in the vegetable economy. 'Recherches sur l'Usage des Végétaux dans l'Industrie Humaine,' the first volume of which established Bonnet's reputation is his 'Contemplation de la Nature;' he published also 'Consideration sur les Corps Organisés.' Réaumur wrote a valuable work on insects, 'Mémoires pour servir à l'Histoire Naturelle des Insectes.' Brongniart, in fact established the science of botany. In botany, Jussieu immortalized himself by establishing a new system of classification of plants. The names of Deluc and Saussure are connected with the history and progress of geology.

Fifth period: from the beginning of the French Revolution to the present time. The violent changes which the Revolution produced in the social state of France had a corresponding effect on the national character and literature, which, in France, more than in any other country, may be regarded as the true picture of the public mind. The period of the Revolution was not favourable to literature, for at such a time nothing but journals and pamphlets could succeed; but it produced a rapid development of eloquence. The Revolution also broke the tramells imposed by the French Academy on the language; and literature was nourished by a great quantity of new words generally formed from Greek and Latin elements. From the establishment of the Directory (1795) the Revolution changed its character; its movement was stopped. A wish for peace was generally felt. As soon as the country began to enjoy internal quiet, the intellectual activity of the nation burst forth with a fresh impulse. The Polytécnique School was established in 1796, and the Institut de France was formed. The reunions of Sciences and of 'Inscriptions et Belles Lettres.' The consular and imperial reign did much for science, but it was not favourable to literature. Practical knowledge and the application of scientific principles were alone in demand. Every man who possessed a talent, and who had a splendid career opened to his ambition, either by entering the armies of the conqueror, or by devoting himself to mathematical and physical sciences, or the arts; and success ensured him imperial patronage and substantial remuneration. It was an age of great books and great men. The Restoration, which was a little more enlightened and suppressed all works which contained opinions contrary to the established order of things; and among the rest the licentious and anti-religious works which had been so abundant in the eighteenth century. The first years of the Restoration were most entirely devoted to publishing the old republicans' pamphlets. Literature however soon began to revive, and France may boast of a great number of excellent works in all branches of human knowledge, which have appeared since the Restoration.

The establishment of a constitution in France, although far from completely insuring the liberty of the nation, has still had a favourable influence on letters. It is true that a check was given to the growth of a sound literature, as well as to the progress of national education, by the unfortunate tendency of the new establishment to avoid all innovations and to suppress all works which contained opinions contrary to the established order of things; and among the rest the licentious and anti-religious works which had been so abundant in the eighteenth century. The first years of the Restoration were most entirely devoted to publishing the old republicans' pamphlets. Literature however soon began to revive, and France may boast of a great number of excellent works in all branches of human knowledge, which have appeared since the Restoration.

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Not inferior to La Martine is Victor Hugo, the leader of the romantic school. Hugo (born in 1802) is the son of a general in the imperial army, and of the daughter of a Veneud chief. His boyish years were spent in Spain and Calabria, where his father was engaged in a war against the Neapolitan pirates, and of which childhood was passed may account for his early tendency to delineate the horrible. The romantic impressions of his boyhood were increased by the traditions of the Veneud, which were related to his mother, a Roman of a superior character, who had educated herself to the education of her children. These circumstances powerfully contributed to develop the natural talents of Hugo, and to give a bent to his poetic genius. In 1817 he obtained two premiums from the Académie des Jeux Floraux of Toulouse, which confirmed his following and entitled him to the degree of a maître des-jeux floraux. The first volume of his 'Lyrical Poems' appeared in 1821, but attracted little attention, although he had already published two novels and two collections of poems. He became more in 1827, by his 'Ode to the Columns of the Peace Veneudian,' which excited a general admiration.

Since that time his reputation has been constantly growing. Hugo's principal poems are published under the following titles:—Oh! a Ode et Ballades; 'Les Orientales; 'Les Feuilles d'Automne.' His works which have produced the strongest impression on the French public contain great beauties: they display an extraordinary imagination, a deep and glowing feeling, and a profound knowledge of the human heart; but they are frequently disfigured by great extravagancies. The poetic talents of Hugo have not atoned for his popularity, and contain the same beauties and defects as his poems. They are—Hermani; 'Marion Delorme; 'Tristan, ou le Roi Lion; 'La Recherche; 'Marie Tudor.' His novels are—Hans d'Island, a wild production, which contains a number of scattered beauties; 'Bug Jargal' is an episode on the Negro revolt of St. Domingo; 'Le Dernier Jour d'un Condamné' describes with heart-rending vividness the feelings of a man on the point of undergoing capital punishment; 'Lucinde,' which is a collection of novels, although perhaps too much tinged with the horrible, contains an admirable picture of Paris in the 15th century.

The most popular poet of France is undoubtedly Béranger. His witty and truly national songs are in the mouth of every Frenchman, from the highest to the lowest. He was born in 1780, of poor parents, and is entirely self-educated. He is equally distinguished for his rare, independent character, and his poetical talent. He never flattered Napoleon during his reign, neither did he abuse him on his fall. His songs have great importance, having been one of the most powerful means of counteracting the retrograde policy of the Bourbons, whose government constantly persecuted him for ridiculing, in a manner which they could not forgive, their and national interests. Long before he had become a great name by directing public opinion: they have compassed in some degree for the want of the liberty of the press, and such has been their influence, that a witty Frenchman defined the government of France before the Revolution, as an absolute monarchy tempered by Béranger. And indeed Béranger's songs did more harm to Charles X. than all the arguments of the press, or the declarations of the liberal deputies. When government deprived him of a small situation which he held, he said to the minister, 'Monseigneur, je vis inscrire sur les charivaris: je vais me tenir pour vivre.' Béranger took an active part in the revolution of July, but declined to accept any place under the new government. Since that time he has written little; his occupation, he says, ended with the expansion of Charles X. Béranger's poems have been often published under the simple title of 'Chansons de Béranger.'

Casimir Delavigne has acquired his reputation chiefly by his dramatic productions; 'Paris; 'Les Vêpres Sicomornes; 'Marine Fable; 'Louis XII. 'Les Fils d'Equite; 'Les Aventures de la Belle Balzane.' He died, however particularly in elegies, of which he published in 1817, 'Les Messenmoues,' which express a patriot's sorrow at the humiliation of his country. The subject of his 'Nouvelles Messenmoues,' 1822, is the struggle of the Greeks for their liberty, and the fact that his writings gave the name of Byron's death. His poems are characterised by exact version, beautiful imagery, and noble thoughts; but in true poetic inspiration he is inferior to La Martine and Victor Hugo. Delavigne belongs to the classical school as well as Viennot, who has acquired considerable celebrity by his poetical epistles and some dramatic productions. Among the other French poets of the period, Millevoye was doubtless the most admired; of his works 'Les Feuilles d'Automne' is one of the finest productions of the kind in the French language. Legouvé is the author of 'Le Morte des Franques.' Barthélemy and Mey established a kind of pastoral partnership, and published in conjunctural poetical satire; like that of Le Filip. The only work written on the young son of Napoleon, was chiefly owing to the popularity of the subject.

Didactic and descriptive poetry has been much cultivated in France during this period. Foremost among these poets stands Delille. The other distinguished writers of this period arc—Eugene, who wrote 'La Navigation;' Cheneville, 'Le Gêne de l'Homme;' the historian Duru, 'L'Astronomie;' Leroux, 'Les Trois Ages;' and Berthoux, the author of 'La Gastronomie,' a production full of sparkling wit and humour.

The epic has been attempted by many recent French poets, but without success. Musson described in his 'Héritiers' the war of the Swiss against Charles the 11th; Bonn Lomna, the translator of Tasso, attempted to introduce an 'Aeneid' into French poetry; and in 1827, a young poet named Maison wrote 'Philippe Auguste,' which some critics consider the best of the epic poems of this period. Creceur & Dessert attempted a series of epic poems, founded on the romances of the middle ages; 'Les Chevaliers de la Table Ronde;' and the same author, under the name of Charles Huguenin, wrote 'L'Indien,' which is a poem, though not in verse. On his return to England he published a poem, 'Esaie, historique, politique et moral, sur les Révolutions anciennes et modernes.' This work contains liberal opinions, and led great success, but Chateaubriand afterwards rejected the author, according to his own expression, a new work with an 'ouvrage mauvais avec une foi antique.' This work, which appeared under the title of 'Gêne du Christianisme,' is doubtless a brilliant production; but its popularity was entirely due to the great skill of the author, as a writer of descriptions. It was the fashion at the time when France, weary and exhausted by the excesses of the Revolution, sought for tranquillity and repose. The chief object of his 'Martyrs,' a poem in prose, is to prove, by placing in juxtaposition the fictions of the Greek mythology and the tenets and principles of the Christian religion, that the latter supply materials for poetry as good as, and even better than, the former. His 'Impérial de Paris à Jérusalem' owes its reputation more to the vivacity than the correctness of his descriptions. Chateaubriand appeared to possess an excellent combination of swelling, glowing, and full of brilliant imagery, and his descriptions are admirable: but his thoughts are not always profound and correct, and frequently want connexion. His language also sometimes degenerates into bombast; and there is truth in the remark that he has often written better than his ideas. Among his other works the most remarkable are 'Etudes ou Discours Historiques sur la Côte de l'Empire Romain, la Naisseance et le Progrès du Christianisme, et l'Invasion des Barbares,' and his essay on English literature.

Next to Chateaubriand, Mme. de Staël has perhaps had the greatest influence on the literature of France. Among the remaining French prose writers we shall mention, first, those who have treated metaphysical subjects. La Villeboeuf, whose works are directed to the young, and are principally didactic, and are written for the juvenile schools. 1. The sensual, which, being the offspring of the eighteenth century, appeared the first, and under the name of the idealised, was long the dominant school in
France. Its chief representatives are Calas, Destutt de Tracy, and Garat. The 3rd is the school of the philosophy of the religious dogmas of authority. It preaches that every dogma, even that of the Holy Trinity, is a dogma of doubting uncertain, and that man has no other guide than the infallible universal admitted opinion (sentiment universel). Having laid down this proposition, he deduces with great ingenuity, by arguments from history and tradition, the consequence that the doctrines of the Roman Catholic church must be considered as the sentiment universal to which there is no truth to be found. He maintains that whoever abandons the authority of Rome must necessarily err, not not in matters of religion, but in every other respect. Every deviation from the doctrines of the church is a punishable dissent; every opposition to the infallible decision of the popes is an impious rebellion; even the Gallican church, which claims some liberties, is a heresy. There is only one church and one doctrine, and every state which does not recognize that doctrine by all the means in its power, and tolerate different religions, commits a crime, and because states now tolerate several kinds of worship, human society is sinking into an abyss, and is becoming atheistical. In order to cure the evils which infect society, it is necessary to bring it back to the sole religious doctrine from which it has strayed, and the pope must become the absolute ruler of human reason.

These doctrines, which would scarcely have been taught even a few centuries ago in Roman Catholic countries, were first proclaimed by J.-M. de Maistre in 1791 in his Essai sur l'Indifférence en Matière de Religion. In his system, perhaps the only characteristic of the style in which he clothed his opinions, he produced a powerful sensation, and gained many partisans, chiefly among young men. He continued to maintain the same opinions in some periodicals, and in his work, De la Religion. This work is considered as a sort of a revolution of July gave another form to civil and ecclesiastical affairs in France, he appeared again before the public, and began to edit, in conjunction with the Abbé Germaine and the count Montalembert, a periodical called l'Avenir, in which, following up the principle of the new constitution, which acknowledges no dominant religion, he maintained with the greatest eloquence that the Roman Catholic clergy of France should now become entirely independent of the state, and neither receive any support from it nor suffer any interference of the government in their affairs. This doctrine however was not approved by the French clergy, and the pope manifested his dissent from it. In 1834 appeared the 'Paroles d'un Croyant,' this little production, which was written in the most beautiful language, and labored to establish the basis of the gospel pure democratic principles, produced an extraordinary sensation. Such doctrines however were too much opposed to the principles of the Roman Catholic church, and the pope formally condemned them. Since that time the abbé has declared himself against institutions.

Among the writers of the ecclesiastical school is De Gerando, who began his career with the ideological school, and his first work, Des Signes et de l'Art de Peuser, considérés dans leurs Rapports Mutuels, is based on that system. He gradually abandoned the ideological school, and his 'Histoire comparée des Systèmes de Philosophie relative aux Principes des Connaissances Humaines,' has contributed to diffuse a knowledge of the German philosophy in France, and is considered the best work in French authors to advance the history of philosophy. He has shown that the course of man's life should be a continued self-education, embracing all his faculties, and directing all his actions; and he has developed these principles in his work, De la Perfectionnement Moral, ou de l'Éducation de soi-même. His work, entitled 'Visiteur du Pauvre,' was crowned by the Academy, and obtained the prix Montyon of 10,000 francs. Laronquiére, author of the Analyse des Sensations, and of the 'Leçons de Philosophie, ou Essai sur les Facultés de l'Homme,' has estinguished the philosophy peculiar to himself. Maine de Biran, who began with the ecclesiastical school, and became afterwards a spiritualist, made himself known by his works, 'Sur l'Influence de l' Habituel.' 'Sur la Décomposition de la Pensée,' 'Examen des Leçons de l'Abbé Lamennais,' the most unfaithful and unorthodox opinions in his 'Inductions Morales et Physiologiques.' and in his 'De l'Existence de Dieu et de l'Immaterialité de l'âme.' Among the best writers of the anti-materialist school is the baron Mathieu, Rapports de la Nature &
l'Homme, et de l'Homme à la Nature; ou, Essai sur l'In-

stant, l'Intelligence, et la Vie,' 5 vols.; and 'Théorie du

Beau et du Sublime Principes de la Littérature, de Philo-

sophie, de la Politique, et de la Morale de l'Homme,

Bonstait, General, the author of 'Rêveries sur l'Homme; ou, Re-


chers sur les Facultés de Sentir et de Penser;' and Droz

has written 'De la Philosophie Morale; ou, des Différen-

Systèmes sur la Science de la Vie.' Royer Collard and Jour-ry

introduced the Second philosophy in France, and there-fore

launched the name 'Revolution.'

The most popular metaphysical writer of France is Victor Cousin, the translator of Plato. His system, which he calls 'Elec-

ticism Imperial appliqué aux Faits de Conscience,' is a

chief of metaphysics; but though the

Frenchs, as well as his 'Principes de la Politique applicable à tous les Gouvernements Répréc-

sentatifs, &c.' and Lermirier's 'Philosophie du Droit,' and

'De l'Influence de la Philosophie du Dix-huitième Siècle sur l'Art Seulement,' by the same

author. We recommend to those who wish to make a

particular study of the French modern metaphysics, Da-

miron's 'Essai sur l'Histoire de la Philosophie en France

pendant le Dix-neuvième Siècle.'

The works of this period may also be divided into three schools—1. The systematical, or national school, the

present head of which is Guizot; and which seeks from

a given mass to deduce certain consequences and prin-

ciples; 2. the descriptive, or narrative, to which belong

Histoire de la Revolution de Ferrand, and the works of

France du Siècle Louis XIV., published 1813, and 'Annales

de l'Education,' 6 vols., 1811-15. He began his historical

career by publishing the lectures which he had delivered

on his mission in 1814. Those of 1821-22 were published under the

title of 'Histoire du Gouvernement Réprésentatif.'

Cours de l'Histoire Moderne,' delivered 1828-30, contains

the 'Histoire de la Civilisation en France depuis la Chute de

l'Empire Romain, jusqu'en 1789,' 5 vols.; and the 'His-

toire Générale de la Civilisation en Europe depuis la

Chute de l'Empire Romain,' &c., which is an introductory

work to the 'Histoire de France.' The preceding work, and one that well deserves an attentive

study; 'Histoire de la Révolution d'Angleterre depuis l'Avènement de Charles I. jusqu'à la Restauration de

Charles II.,' and his historical work 'Guizot,' by the

author of several valuable essays on political subjects:

Quelques Idées sur la Liberté de la Presse,' 1814; 'Sur

le Projet de Loi relatif à la Liberté de la Presse,' 1814;

Du Gouvernement Réprésentatif, et de l'Etat Actuel de la

Française, sur l'Instruction Publique en France,' 1816; 'Les

Moyens de Gouvernement et d'Opposition dans l'Etat Actuel de la

France,' 1821; 'De la Peine de Mort en Matière Politique,'

1822; 'Des Consiprations et de la Justice Politique,' 1821.

Guizot has also published, in conjunction with others, a

'Collection des Mémories relatifs à l'Histoire de France

depuis la Fondation de la Monarchie jusqu'à Louis XIII.,'

31 vols., and 'Collections des Mémories relatifs à l'His-

toire de la Révolution d'Angleterre.' Simondi of Geneva

has treated of an amazing variety of subjects in his nume-

rous historical works, which enjoy a great popularity all over

Europe. His 'Histoire des Républiques Italiennes du Moyen

Age, sans le 'Cyclopédia' into one little volume. He has also written 'Histoire

de la Renaissance de la Liberté en France,' 2 vols.; 'Histoire

de la Chute de l'Empire Romain, et du Déclin de la Civil-

isation a 250 à 1000.' But his chief work is 'L'Histoire

des Événements des Royaumes des Sept à la Révolution,'

which has appeared by the several volumes have appeared. Simondi has displayed a considera-

ble knowledge of philosophy in his 'Histoire de la Littérature

du Midi de l'Europe,' and a thorough acquaintance with political science in his work, 'De la Richesse Commerciaale;

Droit et de腿ont à la Legislation du Commerce,' and in his 'Nouveaux Principes d'Économie Politique.'

Augustin Thierry has thrown considerable light on the

history of France during the middle ages in his 'Histoire de France, and his 'Dix Ans d'Édi-

toriques.' At the same time he has pointed out with great

sagacity the defects of the existing French histories. But

the work which has established his reputation is 'Histo-

rie de la Conquête de l'Angleterre par les Normands, de ses

Causes et de ses Suites jusqu'à nos Jours.' His brother

Amédée Thierry evinced considerable talent in his 'His-

toire des Gaulois depuis les temps les plus reculés jusqu'à l'entière soumission de la Gaule à la domination Romaine;

and in the 'Résumé de l'Histoire de Guynne.' Thiers

has also treated of the 'Reign of Henry IV.,' the

which has received universal popularity; and Mignet's on the same

subject, which is much more condensed, is also deservedly

esteemed.

The work of the Abbé Mongaillat, entitled 'Histoire de

France depuis le Régne de Louis XVI. jusqu'à la Rév-

olution, has the merit of brilliant narration, and the intro-

duction contains much valuable information. Depping has

written 'Histoire des Expéditions Maritimes des Nor-

mands et de leur Établissement en France au Dixième

Siècle.' Baratto, the author 'De la Littérature Française

pendant le Dix-huitième Siècle,' has also published a valu-

able but very entertaining work, which contains a faith-

ful picture of the times in his 'Histoire des Ducs de

Bourgogne,' 13 vols., with an atlas, portraits, maps, &c.

Audin is the author of 'Histoire de la St. Barthélemy,'

1826; and the Comte de St. Aulaire of 'l'Histoire de la

France,' 3 vols., 1827.

l'Histoire de la Restauration et des Causes qui ont

améné la Chute de la Brauch à l'Empire,' 6 vols., 1824;

a work of great literary merit, and also the author of

the ex-minister Duc decaze, but it is the production of

Capelguer, one of the most learned writers of France, and

also the author of the following works: 'Histoire de Phl-

lippe Auguste,' 'Histoire Constitutionelle et Administra-

tive de France depuis les Régnes des Poitevins et des

Invasions des Normands.' Daru's 'Histoire de la Brétagne,

and particularly his 'Histoire de la République de Venisse,'

are generally accepted to be masterpieces. Roujou's

'Histoire des Rois et des Ducs de la Bretagne,' is not de-

void of merit. Dulaure has given a rather dark picture of

past ages in his 'Histoire Physique, Morale, et Civile de

Paris,' 10 vols. He has also published 'Histoire des Envi-

rons de Paris,' and 'Esquisses Historiques sur la Révolution

Française,' 5 vols. Lacretelle obtained considerable popu-

larity and reputation with his 'Histoire du Roi de

Siècle,' and 'Histoire de France pendant les Guerres de

Religion;' but the same success has not attended his

'Histoire de la Révolution Française,' partly on account

of his ultra-royalist tendency. Ferrand's 'L'Esprit de

l'Histoire,' has attracted much notice, though written in

favour of absolute governments. He is also the author of

a valuable work, particularly viewed with reference to the

excellent materials which it contains for the history of the

'Protestant Reformation,' ou Reunions de l'Etat Actuel de Trois Démeuremens de la Pologne.' Michaud's 'Histoire de la

France,' has obtained considerable reputation, as well as his 'Histoire du Progrès et de la Chute de l'Empire de

Mysore sous les Régnes de Hyder Ali et de Tippou Sahab.' The work entitled 'Les Juifs

de France, ou Relations des Juifs à l'Etat Civil, le Commerce,

la Littérature des Juifs en France, et de l'Empire d'Espa-

gne,' pendant le Moyé Age, treats a subject that has

seldom and only imperfectly been touched by the

historian, Bignot threw considerable light on the
middles age by his 'Histoire du Gouvernement Féodal.' We may consider as belonging to French literature the work later published by his son, Eugene Anelion, ‘Considerations générales sur l'Histoire,’ and his ‘Tableau des Révolutions du Système politique de l'Europe.’

Military history has been treated by Dumas, in his "Histoire des Événements Militaires, ou l'Historiographie des Campagnes de 1792 à 1814," 26 vols.; and by Jomini, ‘Traité des grandes Opérations Militaires,’ 18 vols. Chambray and Labaume have written the history of the campaign of Russia in 1812. Segur's work on the same subject, which is a merit in literature connected with little military information, and belongs to the class of poems in prose. Marshal Gouvion St. Cyr is the author of ‘Mémoires sur les Campagnes depuis 1792 jusqu'à la Paix de Campo Formio,’ 4 vols.; of which his ‘Mémoires sur les Campagnes de 1792 à 1814’ was written in continuation. General Foy's ‘Histoire de la Peninsular War’ is a work of merit; but the most remarkable work on the subject is undoubtedly that which Napoleon dictated at St. Helena. ‘Mémoires pour servir à l'Histoire de France depuis 1792 jusqu'au 18e jour du mois d’août 1815, sous la dictée de l'Empereur, par les Généraux qui ont partagé sa Captivité, et publiés sur les Manuscrits entièrement corrigés de sa main;’ 8 vols. The work of the same great man on the wars of Cesar, which has been recently published by the Société des Antiquaires de France, is also a work of importance.

There is an extraordinary abundance of historical memoirs relating to this period. J. F. Banier and St. Albin Bertville have published, ‘Collection des Mémoires relatifs à l'Histoire de la Révolution Française,’ Mémoires partiels d'historiens, et de professeurs de l'Université de Paris, 2 vols. Paris, 1812. ‘Collection des Mémoires Historiques des Dames Françaises.’ Of the Mémoires relating to Napoleon, the most important are those of Lascara, who accompanied Napoleon to St. Helena, Bournienne, E. Fain, Constant, &c. Those of Marie Jeanne le Bas, and the letters of Marie Antoinette, Carnot, Fouché, Louis XVIII., Mira- beau, M. de Roland, &c., are all works of great interest, inasmuch as they relate to the most eventful period in the history of the world. The most entertaining of these memoirs of productions are the ‘Mémoires de Madame de la Roche Jaquelin,’ who describes in an admirable manner the scenes of the Vendean war, of which she was an eye-witness herself. The French have done much for the study of history during this century, and have published four notable works in the domain of philology, in the last thirty years, and have also published a number of useful materials for the study of the French language and history. The most valuable work on the subject of the French language is contained in the Archiologie Française, or Vocabulary of the Mots anciens et modernes, which is the most important and the most useful work on the subject of the French language, published in Paris, 1786. It has been translated into many languages, and has been the basis of many of the modern works on the French language. The work of the French literature, the works of Laharpe, de Saussure, Guizot, and the latest work on the subject, as well as the articles relating to French writers in the Biographie Universelle and the Biogr. Univ. Portative des Contemporains may be consulted.

FRANCE, ISLE OF. [MAURITIA]
FRANCH COMTE, a province of France, and one of the thirty-two military governments into which, under the old regime, that kingdom was divided. It is of an irregular oblong form, having its greatest length from north-north-east, near the head of the river Seine, to south-south-west, near the town of Besançon, on the river Ain. It is divided into seven counties or districts and two towns, but has been incorporated with France. The population of the towns is from the census of 1836.

Bailliage d'Amont-Vesoul (capital of the bailliage), 3867; Faucogney; Luxeuil; Jussy; Gray, 6553; Lure, 2930; Baume les Dames, 2519; Bailliage du Mille Beaunon, capital of the bailliage and of the whole province 29,718; Ornans; Quingey; Dôle, 10,137—Bailliage

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The province is wholly in the basin of the Rhône: it is watered by the Saône and the Ain, feeders of the Rhône, the Doubs, and Ognon, feeders of the Saône, and several other streams; and in respect to the sea, the coast, and the more level parts of the province are fruitful in grain; the upper parts produce pasture for a vast number of cattle. The province is now divided into the departments of Doubs, Jura, and Saône-Haute.

In France, in the time of Caesar, inhabited by the Sequani, a Celtic people, one of the most powerful in Gaul. Their contentions with the Celts led them to call in the Germans, under their king Ariovistus, by whose aid they effectually humbled their opponents; but the warlike Germans had introduced the spirit of that part of Gaul, and especially of the unhappy Sequani. Caesar drove out the Germans (15 n.C.); but it was for the natives only a change of masters, and the Sequani, with the rest of Gaul, passed under the yoke of Rome. Under the Roman dominion Franche Comté, with Switzerland and part of Bourgogne, constituted the province of Maximianorum.

Upon the downfall of the Roman Empire Franche Comté was comprehended in the kingdom of the Burgundians, upon the division of their dominions by the treaty of Paris, and afterwards of Lotharingia, or Lorraine. In the reign of Charles le Simple, king of France, to whom, after several changes of possession, it then belonged (1032), the Burgundians, or the principality Outre Saône (beyond the Saône) which had fallen, Besançon, with the surrounding districts, was formed into a county, called the county of Bourgogne, in favour of Hugh, the first count (A.D. 915). Some wars were fought between France and Bourgogne, as part of the kingdom of Bourgogne Trans-Jura, and prolonged the possession of the county of Bourgogne until A.D. 959. (See L'art de vérifier les dates.)

René III. (A.D. 1127-1148), count of Bourgogne, whose descendants, driven from Burgundy by the Leô, refused homage on various pretexts to Lothaire, emperor of Germany, to whose predecessors the counts of Bourgogne had paid homage, and maintained his refusal during his life. It is supposed that the county derived from this circumstance its designation of La Franche Comté.

The marriage of his daughter to the emperor Frederick Barbarossa brought the county into the hands of that prince, who made Besançon a free imperial city. He resigned the county to his son Otto, by the marriage of whom it was surrendered to the county of Burgundy, as of the kings of France and the dukes of Burgundy, the first and second race of the blood royal of France. On the death of Charles le Hardi, last duke of Bourgogne of the second race (Bourgouconné), the county passed, with a considerable portion of its inheritance, to the archduchess Maximilian, from him to his grandson Charles V., and so to the Spanish branch of the Austrian family. In 1660, Louis XIV. of France conquered Franche Comté from the Spaniards, but restored it by the peace of Aix-la-Chapelle in 1668. It again composed itself in 1674, and it was ceded by Spain to France at the peace of Nimue in 1678.

FRANCHISE, a species of incorporeal heredity. Franchise and liberty are used as synonymous terms, and the word franchise is a privilege, or license, granted by the universal power, as it is given, to a man of the most inconsiderable degree, and it must be included in the exercise of their franchise, which is an injury known to the law as a disturbance of

FRANCIS I. of France was, like Louis XII., descended from Charles the Wise through Louis I. duke of Orleans. His mother, Anne of France, daughter of Louis of Orleans, married in 1471, the Duke of Burgundy, and his two sons were for a long period princes to the English. The younger of the two, John count of Angoulême, was succeeded by his son Charles. During the life of Louis XII. the count of Angoulême had some difficulty in guarding the succession of the king, and by his command married Louise of Savoy, who, on the 12th of September, 1494, became the mother of Francis I. Louis XII. took charge of the infant heir of Angoulême at the death of his father, and afterwards gave him his ward, his heart, and his government. Francis I., while in the midst of the defence of the frontiers on the side of Spain and Flanders, and succeeded to the throne at the age of twenty-one, in January, 1515.

One of his first endeavours was to prosecute the claim to the dukedom of Milan, which was derived from his second mother, Valentina. Against this expedition the Swiss had already combined with Pope Leo X. and with the king of Spain; but Francis having passed the Alps unexpectedly, a battle took place at Marignano, in which the Swiss were made to suffer more than their usual valour and courage. The combat lasted two days, and from 10,000 to 15,000 Swiss are said to have fallen in it. The victory of the French entered Milan on the 23rd of October, 1515, and peace was shortly after concluded with the pope. The States-General of France were dissolved (1516). Francis I. was destined to be the rival of Francis throughout his whole career, succeeded to the kingdom of Castile, notwithstanding his mother Joan was still alive. The frontier states to France on the side of Flanders and of the Pyrenees were then in the hands of the Spaniards, and emerged to have been the part of the county of Bourgogne Trans-Jura, and prolonged the possession of the county of Bourgogne until A.D. 959. (See L'art de vérifier les dates.)

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vengeance of slighted love on the part of the king's mother, fled to his enemies. The French under Bonnivet, however, passed the Ticino in spite of the veteran Prosper Colonna; and the failure of three attacks on the side of Gagnoa, Burgundy, and Flanders, left Francis in as good a position as the strength of his adversaries would allow him. The Council of Trent, consisting of the French troops, and Francis himself remained a prisoner in the hands of Lannoy, vice-king of Naples. He announced the result of the battle of Pavia to his mother in the celebrated words, "Tout est perdu, l'Église est perdue!" Robertson says, "On that occasion, the great abilities of Louise the regent saved the kingdom, which the violence of her passions had more than once exposed to the greatest danger." Henry of England and his minister Wolsey were inclined to hear to her overtures; the former because he was alarmed at the domestic affairs of Charles; the latter because he had been a second time disappointed of the papal crown by the election of Clement VII.

Charles demanded, as the ransom of the French king, Burgundy for himself, France and Dauphin for Francis, and the return of all claims on the Italian states. He caused his prisoner to be conveyed by sea from Genoa to Barcelona, and thence to Madrid, where he detained him in rigorous confinement, until the alteration in his heart, the emperor's fears, and all the advantages which he had anticipated. At length the treaty of Madrid was arranged (1526). Francis was to cede Burgundy, to give up all claims on Italy or on the sovereignty of Flanders and Artois, to restore Bourbon to his dignities and estates, to deliver Elizabeth, the daughter of Portugal, sister to the emperor, and finally to deliver his eldest son as hostages for the fulfilment of these stipulations. While he pledged his oath and honour for the observance of the conditions of the treaty, he caused a secret protest against the very article of sending his eldest son to Madrid, and reserved it. In vain demanded the fulfilment of his oath, from which the pope had absolved him, Francis entered into a league with the Venetians, Clement, and Henry of England. The imperial generals, taking advantage of a delay on the part of the French on their demand, delivered them quite separately to Sforza, whom Charles had already declared to have forfeited his duchy. In 1527 Bourbon advanced upon Rome; he himself fell in the assault of that city, which suffered more from the army of a Christian emperor, the especial patron of the Roman see, than has ever done from the most barbarous of her heathen invaders. Clement himself, shut up in the castle of St. Angelo, was at length obliged to surrender, and was only released for a heavy ransom at the termination of six months' imprisonment.

It was in vain that Francis told the emperor to relax the terms of the treaty of Madrid, the negotiations terminated in a declaration of war on the part of France and England. Charles accused his rival of perjury, to which Francis replied by a challenge to single combat. In February, 1528, the imperial army, wasted by the disease consequent on its excesses, was with difficulty dragged off from the miserable city on which it had preyed for ten months. Lautrec followed them, and sat down before Naples; but the French army were in their turn attacked by the Venetians, who were supported by a garrison, which surrendered to the prince of Orange at Avens. Andrew Doria, dissatisfied with the conduct of the French, renounced their alliance and liberated Genoa, while Antonio de Leyva ruined the French army in the battle of the Ticino. Upon the death of the French king, his nephew, the emperor, Florence was restored to the Medici, and Clement allowed himself to be guided by the wishes of Charles as to the divorce of Catherine of Aragon from Henry VIII. He met however with eagerness a proposition on the part of Francis for the union of Catherine, of the Medici, to the dukedom of Orleans, afterwards Henry II.

The insurrections in the empire manifested by the diet of Augsburg (1530) and the league of Schmalkalden, induced the French king to encourage that religious party in Germany, which he had opposed before the absence of Charles in Africa (1535) he advanced into Italy under pretext of punishing Sforza, now returned to his duchy, for the execution of his ambassador, and seized the territory of Savoy. It was not until the spring of 1535 that the emperor was able to take active measures against him. Sforza died, and the imperial troops drove the French out of Savoy and advanced to the borders of Provence. The French had laid waste the whole of Dauphiny; and although Arles and Marseilles were besieged, Montmeyron, a second Fabius, kept his army together, and refused to risk a battle. This policy succeeded so well, that at the end of two months the imperial army was compelled to retreat in a miserable state. After an attack by Francis on Flanders, he concluded an armistice and signed at length agreed on through the mediation of the two sisters, the queens of Hungary and France. The exhausted state of his treasury, and the fear of an alliance between Francis and the Turk, induced Charles to consent to a cessation of arms in Piedmont also, which was followed by a truce for ten years, concluded at Nice.

Charles then embarked for Barcelona, but being detained by contrary winds on the coast of Provence, Francis proposed a personal interview. The French king went on to the emperor's interview, and the latter returned to visit at Aigues Mortes. Thus after years of the bitterest hostility and enmity, after accusations of perjury on the one hand and of murder on the other, and after a challenge to mortal combat, these two princes presented the singular aspect of a reconciliation of names in the field of honor. The marriage of James of Scotland with Magdalen of France, and afterwards with Mary of Guise, tended greatly to estrange Henry of England from the French court, while a better understanding seems to have followed the interview of Charles and Francis. A proposal of the citizens of Ghent, delivering the emperor into the hands of the latter, was not only rejected, but the designs of the malcontents were betrayed to the emperor (1539). Charles put the sincerity of his new friendship to a more severe test by going to France to see the king, and was conducted away from Spain to the Low Countries. Francis met him at Chatellerault and received him as his guest in Paris. A promise was made of investing the duke of Orleans with the duchy of Milan; but all demands for its fulfilment by the third of the ambassadors of Francis were evaded by the emperor.

While the latter was preparing his expedition to Algiers, the king of France sent to demand satisfaction for the murder of his ambassador to the Porte, Rincon, who was assassinated, if not assassinated, in the name of the emperor to relax the terms of the treaty of Madrid, the negotiations terminated in a declaration of war on the part of France and England. Charles accused his rival of perjury, to which Francis replied by a challenge to single combat. On the 8th of May, 1542, the imperial army, wasted by the disease consequent on its excesses, was with difficulty dragged off from the miserable city on which it had preyed for ten months. Lautrec followed them, and sat down before Naples; but the French army were in their turn attacked by the Venetians, who were supported by a garrison, which surrendered to the prince of Orange at Avens. Andrew Doria, dissatisfied with the conduct of the French, renounced their alliance and liberated Genoa, while Antonio de Leyva ruined the French army in the battle of the Ticino. Upon the death of the French king, his nephew, the emperor, Florence was restored to the Medici, and Clement allowed himself to be guided by the wishes of Charles as to the divorce of Catherine of Aragon from Henry VIII. He met however with eagerness a proposition on the part of Francis for the union of Catherine, of the Medici, to the dukedom of Orleans, afterwards Henry II.

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force against which he had to contend. France, in his reign, showed the same character in which she appeared again in the following century. As in the time of the thirty years' war, she, a Catholic power, aided the Protestant cause: so in the early part of the sixteenth century, when the danger was the more imminent, from the whole strength of the heretics. On the hands of Charles V. the French king was the only efficient barrier to the universal monarchy of the house of Austria. It was Francis I. who favored the revolt of Geneva from the dukedom of Savoy, and enabled that city to find an independent existence which was one of the main props of the reformed faith. While however he fostered religious rebellion in Germany, he proved his orthodoxy in Paris by the utmost clemency to the heretics. The gallant manner in which he struggled against his formal and spiritual rival, and grappled his personal and public enemies in the interest of the crown, excited our sympathy in his favor: his personal courage was unbounded, and his generosity on the two occasions in which Charles put himself in his power, more applicable than his conduct with reference to the treaty of Madrid. The end of his life, in the "Biographie Universelle," says, "It was pity, every Frenchman was his accomplice. The hard nature of the conditions however cannot justify an open and deliberate oath, accompanied by a secret protest. The king is said to have sworn from the sword of Bayard, and his usual mode of affirming what he said was—Foi de Gentilhomme."

In his family Francis was far from happy: by his first wife Claude of France, daughter of Louis XII., he had three sons and four daughters; his eldest, the Dauphin, had to leave the land by his caprice; Montemourial: whether such was the fact is very doubtful, and there is certainly no reason to suppose that the crime was instigated by Charles V. The second son succeeded to the throne by the title of Henry II. Francis comes to the title of Elephant of France, and of his five children his private life is not entitled to much praise. Madame de Charentel, sister of Lorraine, the duchess of Remps, and la belle Fereine, were successively his mistresses: to vengeance on the part of the husband of the last, to have escaped, but the Dauphin, and his children: the first time became constant attendants at the French court, and the foundation was laid for those profane manners so fully developed in the succeeding reign.

As the patron of art and literature, Francis the First ranks deservedly high. He reigns at the moment when understanding and learning and higher principles of art were spreading from Italy to the rest of Europe. Baldé, Lebrun, Errous, the Stephens, and Marot, were enabled to boast of his encouragement, and he well deserved being the patron of Pimentier and Collin; while a greater than either, Leonardo da Vinci, is said to have died in his arms. (Robertson's "Charles 1.: Père Daniel, Histoire de France; Dict: de la Biographie Universelle; Leopold Rauke, Geschichte der Popul.)

FRANCIS II. of France, born in 1543, was the eldest son of Henri II. and of Catherine de Medicis. He married, in 1558, Mary Stuart, only daughter of James V. of Scotland. On the death of his father, 10th July, 1559, Francis became king, being then three years of age. He was a great favorite and trusted the government to his prince of Guise and his brother the cardinal of Lorraine, uncles of Mary Stuart. This was the beginning of the civil and religious wars which destroyed the last half a century of the reign of Francis, king of Navarre, and Louis his brother, prince of Condé, with the other princes of the blood, and the great officers of the state, being indignant at seeing all the power of the state in the hands of two strangers, conspired against the Guises and pronounced the Protestants for that purpose, as the Guises were the zealous supporters of Catholicism. In March, 1560, the Guises having been informed of a conspiracy against them, removed the king and court to the château of Amboise; the king named the duke of Guise lieutenant general in the kingdom, and in order to hold back the rebels, the establishment of the Inquisition in France, which was proposed by the cardinal de Lorraine, and in hopes that the bishops would prove more humane than the parliament, who had put a great number of Protestants to death.

By a former edict, issued at Escouen by Henri II. in June, 1529, all the Lutherans were declared punishable by death. The name of Huguenots, to denote the Calvinists as a species of Jews, which was justly given to them by Père d'Coligny having presented to the king a memorial in their favor, it was resolved, at the suggestion of the chancellor De l'Hospital, to leave them in peace, until the general council should decide, and that if the pope did not assemble a general council, national council should be convoked in France. The king assembled the states-general at Orleans, when the prince of Condé, on his arrival, was arrested in the charge of a conspiracy, and condemned to lose his head; but he was saved by the death of the king 5th December, 1560. Francis, after the death of this rebellious prince, succeeded by his brother Charles IX., then a minor. Francis II. died of an abscess in his ear; and the rumours of his death, which were spread at the time seem, according to De Thau and other historians, without foundation.

FRANCIS II. was the ancestor of Francis, the son of Leopold duc de Lorraine, who was the son of Charles V. of Lorraine, and of Eleonora Maria, daughter of the emperor Ferdinand III. Francis's mother was the princess of Orleans, niece of Louis XIV. On the death of his mother, Francis succeeded to the crown of France and Bar. In consequence of the war of the Polish succession, Lorraine was ceded to Stanislas Leski, father-in-law of Louis XV., to revert after his death to the crown of France, and Francis received Tuscany in compensation.

In 1574 Francis married into the house of Austria, the only daughter and heretrix of the emperor Charles VI. In January, 1579, he went to meet at Florence with his consort. In 1576 Charles VI. formed a league of the states of the house of Austria, to make her husband a regent with herself, but gave him little share in the administration. He however commanded her armies in the war which she had to sustain in order to secure her inheritance (Marot's "History of France"). An interview took place between Francis and his cousin Charles VII. in 1573. Francis was elected his successor on the imperial throne. In 1578 the peace of Aix-la-Chapelle restored peace to Germany and to Europe; but in 1579 new troubles broke out between France and Austria by the name of the Seven Years' War, which was terminated by the peace of Hubertusburg, in February, 1656. Following year Joseph, the eldest son of Francis, was elected king of the Romans, and in 1673 Francis died at Metz, Joseph succeeded him as emperor of Austria, and received the sovereigns of the Austrian dominions till her death. As emperor of Germany and grand-duke of Tuscany, Francis led him the reputation of a good prince, though he was a bold and rash warrior against the Turks.

FRANCIS II., Empress of Germany, and I. of Austria, the eldest son of Leopold II. and of Maria Louise of Savoy, was born at Florence in February, 1576. At an early age he was sent to Venice to be brought up under the care of his uncle, Joseph II., who gave him his education in that capital. He was particularly well instructed in the science of administration, and he made himself master of all its details. He was also engaged in several campaigns against the Turks, and was present at the taking of Belgrade by the emperor in 1686. At his victory of Pavia, in 1579, Francis took the direction of the government till the arrival of his father from Florence. Two years after Leopold himself died, in 1592, and Francis, who succeeded to his vast dominions, was likewise elected his successor. He went to war against the imperial enemy, and left France at a very inauspicious moment. The rash or precipitate, though well meant reforms of Joseph II. had sunk deep discontent in several parts of the hereditary states of Austria, which the conciliatory measures of Leopold had not time to remove, and the number of parties was increased to the eye of a war with France. In April, 1592, Louis XIV. was obliged, by the legislative assembly, to declare war against him. The Austrian armies on the Rhine came out to meet the war for some years with various success, and the decisive battle of Parnawa, in Italy, 1596, put an end to the Austrian hopes. In 1576-7, decided the fate of the war. [BONAPARTE] for the treaty of Campoformio, Francis gave up Belgium and the duky of Milan, receiving in exchange Venet
Dalmatia. In 1799, new coalitions took place between Austria, Russia, and England, and their allied armies were eminently successful, both in Italy and Germany; but a misunderstanding between the Austrian and Russian commanders led to the defeat of the Russians in Switzerland.

In 1800, Bonaparte having won the battle of Marengo and proposed the negotiation of peace followed; but Francis refused to treat separately, as by which Ferdinand, the emperor's brother, was obliged to take part because he and his uncle to renounce Modena. In December, 1804, while Napoleon crowned himself emperor of France at Paris, Francis foreseeing the approaching dissolution of the German empire, imposed himself hereditary emperor of Austria. In 1805, feeling the consequent movements of Napoleon in Italy and Holland, the Austrian cabinet formed a new coalition with Russia and England. The campaign was unfavourable to Austria, the French entered Vienna, and the battle of Austerlitz finished the war. By the following peace of Pressburg, Austria gave up the Venetian states and the Tyrol. The old German empire was now dissolved after a thousand years' duration; and in August, 1806, France renounced the Austrian-Lombardic alliance, which had named Francis I, emperor of Austria, king of Bohemia and Hungary, &c. He now availed himself of some years of peace to repair the calamities of the former wars, to make reductions, enforce a strict economy, and support the credit of the state. In the strictest sense, Francis I, 1806, was the last emperor of Austria. Austria maintained a strict neutrality. After the peace of Tilsit and the conferences of Erfurt between Napoleon and Alexander, the occupation of North Germany by the French, and the invasion of Spain, the emperor Francis felt alarmed, and in 1807 he declared war on Napoleon. His last military campaign was fought at Moscow, which he entered. Charles Polonia, an Austrian, and Joseph Chasteler entered the Tyrol, where the people rose to a man for their former sovereign. This war had a different character from the preceding, inasmuch as the people of Germany began now to take part against the French; corps of partisans were formed under Schill, the duke of Brunswick Oels, and others who annoyed the French, and a general spirit of insurrection manifested itself against the foreign yoke. The operations of the war were also complicated by the efforts of France to disunite the Mohammedans, the Turks, and the Russias, and Jona, when a single battle had decided the fate of the state. The Austrians now fought detached engagements with various success, and although obliged to retreat, and even to abandon Vienna, the archduke Charles frantically attempted to hold the capital. He had the advantage; the Austrian army was fought with a tremendous loss on both sides, and Napoleon was obliged to retire across the Danube. After some time the battle of Wagram took place, and although lost by the Austrians, yet the archduke retired in good order. He provided an amnestie, which Napoleon accepted, and after long negotiations the peace of Schönbrunn took place in October, 1809. Austria gave up Trieste, Fiume and Croatia, Salzburg, and part of Galicia.

In 1810 Napoleon married a daughter of the emperor Francis. In 1812, during the Russian campaign, an auxiliary Austrian corps, under Schwarzenberg, acted in Poland against Russia, but it effected little. In 1813 Austria resumed its neutrality, and offered its mediation between Russia and France on condition that both powers should evacuate Germany. On Napoleon's refusal, Austria joined the allies, and its army contributed mainly to the great battle of Leipzig, which decided that campaign. In the following year the Austrian armies entered France by the way of Switzerland, and occupied Burgundy and Lyon. The object of the Emperor of Austria was to stop the Russian troops, and as the Russians and Prussians had entered Paris, in April, 1814, he proceeded to that capital, where he remained two months. In June, 1814, he returned to Vienna, where the congress of the European powers opened its sittings. In 1815, after Bonaparte's return from Elba, the Austrian forces advanced again by the Simplon road and occupied Lyons, and another Austrian army had driven Murat from Naples and re-conquered Ferdinand. From that epoch till his death the emperor Francis remained at peace, with the exception of a short campaign against the constitutional party at Naples in 1821, when he appeared as auxiliaries to King Ferdinand. When he died at Turin, born at Vienna, Francis and his minister, Prince Metternich, to the suggestions of the more violent legitimists, and determined not to interfere in the internal affairs of France, provided that it respected the existing treaties with regard to its foreign policy. The empire, which he had followed the same course, and thus Europe was saved from another general war. Francis died at Vienna on the 2nd of March, 1835, in his sixty-seventh year, and was succeeded by his eldest son Ferdinand.

The peculiar character of the emperor Francis has been spoken of favourably even by his enemies. In Austria and his other German states he was decidedly popular, and personally loved, especially by the middling and lower classes. He was accessible to all; kind and plain spoken, simple and regular in his habits, sediuous to the point, his simple conduct was unexceptional. His policy and administration have been differently judged by writers, according to their respective opinions. He was decidedly and openly adverse to princely absolutism, and from the French revolution and its consequences, he had conceived the maxim of revolutions, and of every movement that partook of a democratic spirit. The ruling principles of his administration were love of order, minuteness of detail, economy, and respect for external territory. These ideas, which agreed pretty well with the character of his German subjects, clashed with the temper of the people of Italy, whose activity, love of pleasure, military ambition, and national spirit, had been stimulated during twenty years of French domination. He had completed the conquest of the kingdom of Naples, and withstood the bankruptcy of the French army, which sentence the emperor committed to imprisonment for various periods in several fortresses, but mostly in the castle of Spielberg, in Moravia. In other respects Francis's administration was mild and temperate. He promised material improvements, roads, canals, and manufactures. His views of commercial policy were of the old or Colbert school. In one particular he deserves unqualified praise, as the promoter of popular education: he established elementary schools throughout all his dominions, and superintended himself the appointment of teachers. An account of the system is given in an article in No. VI. of the ‘Quarterly Journal of Education,’ entitled ‘Italian Education.’ With regard to religious tolerance, Francis followed the principles of his predecessors, Joseph and Leopold, and he completed the cession of the kingdom of Galicia to Russia, which is called by his name. Further details concerning the emperor Francis, his court, and cabinet, may be found in the following works among others: Russel's Tour in Germany; Austria as it is, London, 1827; Menzel, Reise nach Oesterreich, 1831; and a book published at Paris in Italian, called Semplice verita opposta alle menzogne di Enrico Miele, 1834, in which many exaggerated or unfounded charges against the emperor Francis are refuted by means of authentic facts and figures. Although the policy of Austria has been the subject of censures of those who have generally been very able men, yet there is no doubt that the personal character and principles of the emperor Francis have had very considerable influence.

FRANCIS SAINT), and FRANCISCANS. St. Francis, the founder of one of the four orders of mendicant friars, called Franciscans, was born at Assisi, in Umbria, in 1182. He was the son of Peter de Bernardino, a wealthy merchant, and his mother's name was Pica. His mother christened him John, but his father, who was absent at the time of his birth, called him Francesco. He was the 'Annals Minorum,' says, because he learned French early, to qualify himself for his father's profession, Jacobus de Voragine turns it into a miracle; Primo ratiune miraculi connotandi: Ingham enim Galliam miraculis a Deo receptae cognoscitur. (L'extre) Sforza, Octob., tom. ii. Digitalized by Google
of solitude, and manifested himself to so great a degree that the inhabitants of Assisi judged him to be distracted. His father, thinking to make him resume the habits of ordinary life, threw him into prison; but finding that he impregnated himself, before the bishop of Assisi, in order to make him renounce all title to his father's temporal possessions, which be not only agreed to, but stripped off all his clothes, even to his shirt. He then prevailed with a considerable number of persons to devote themselves, as he had done, to the poverty, which be considered as enjoined by the gospel, and drew up an institute, or rule, for their use, which was approved by Pope Innocent III. in 1210, as well as by the Council of Lateran held in 1215. In 1211 he obtained from the Benedictines of the church of Portonuova, near Assisi, and his Order increased so fast that when he held a chapter in 1219, near five thousand friars of it were present. He subsequently obtained a bull in favour of his Order from Pope Honorius III. About this time he went into the Holy Land, and endeavoured in vain to convert the Sultan Melitan. It is said that he offered to throw himself into the flames to prove his faith in what he taught. He returned soon after to his native country, and died at Assisi in 1226. He was canonized by Pope Gregory IX. the 6th of May, 1220, when, October 4th, the day on which his death happened, was appointed as his festival.

The followers of St. Francis were called Franciscans, Grey, or Minor Friars; the first name they had from their founder; the second from their grey clothing; and the third from their habit having a loose garment of a grey colour, reaching to their ankles, with a cowl of the same, and a cloak over it when they went abroad. They girded themselves with cords, and went habit-footed.

The Order was divided into several bodies, some of which were more rigid than others. The most ample and circumstantial account of it is to be found in Annales Minorum, seu Trisum Ordinum à S. Francisco Institutorum, auctore Luca Waddingo Hiberno; the second and best edition of which was published at Rome by Jos. Maria Fonseca ab Ebors, in 15 volumes in fol., 1713-1744, with a supplement, Opus posthumum Fr. Jo. Hacainhi Soraluin, fol., Rom., 1806. To Wadding we are indebted for the Opuscula S. Francisci, 4to. Antw., 1623; and the Bibliotheca Ordinis Minorum, 4to. Antw., 1754. The Bollandists already quoted (Octob. tom. ii. p. 545-1006), contains several lives of St. Francis, including that by St. Bonaventure.

Davenport (Hist. Protr. Min. p. 2) says this order came into England in 1219; but Stow, Dugdale, Leland, and others, say the Franciscans came in 1224, and that they had their first house in Canterbury, and their second at London. Tanner says (Notit. Monast. p. 13), that at the dissolution the Conventual Franciscans had about fifty-five houses in England; but from the last edition of Dugdale's 'Monasticon,' it appears they had sixty-six. Their rule, as translated by Stevens, with several charters of Edward III. and one of Richard II. in favour of them, will be found in that work, vol. vi. p. iii., pp. 1504-1508. See also Parkinson's Collection of the Antiquities of the English Franciscans, or Friars Minors, commonly called Grey Friars, 4to., Lond., 1726.

The original of the Franciscan rule will be found in Wadding's 'Annales,' vol. i. p. 66-79.

FRANCIS, REV. DR. PHILIP, was the son of the Rev. John Francis, dean of Lismore, and rector of St. Mary's, Dublin, in which city Philip was born in the early part of the last century. It is biographical and biographical only that the rector of St. Mary's was the father of the present author, who resided at the Revolution on account of his Tory principles; but this must be a mistake, if we may rely on the dates given in a detailed memoir of Sir Philip Francis, by a personal friend, in the Annual Obituary, for 1850, where it is stated that the Rev. John Francis was nominated dean of Lismore in 1722. The story of the ejection, if we may trust to this authority, cannot even be true of the grandfather of the subject of the present article, whose name was also John; for he, it seems, became dean of Leighlin in 1656, and sat in convocation in 1704. Philip was educated at the university of Dublin, and then entered the church, the profession of a stream which runs from all points to a common end. He travelled abroad. About the year 1750 he came over to England, and set up an academy at Shelter in Surrey, where Gibbon was for a short time one of his pupils; but the historian in his posthumous memoirs gives no favourable account of the institution. From his earlier career he carried with him to England the pleasures of London to the instruction of his pupils. While in this situation he published his poetical translation of Horace, which immediately brought him into notice, and still continues to be reprinted. It has the advantage of being the only complete metrical version in English of the works of that poet, but has no pretensions to be considered an adequate representation of the original. He also published in 1757 a translation of the 'Orations of Demosthenes and Xerxes,' in 2 vols. 4to. Before this he had published two tragedies, 'Eugenia,' 1751, and 'Constantine,' 1754. "Eugenia" was acted at Drury Lane, Garrick sustaining the principal character; but although repeated for nine nights, it was very indifferently received. It is said in the 'Biographia Dramatica' to be little more than a free translation of a French tragedy by Grasigny, called 'Cenie,' of which a literal version was published the same year under the title of 'Cenis;' or, the Supposed Daughter. 'Constantine' was produced at Covent Garden. 'It met with very bad success," says the 'Biog. Dram.', 'by some not by many persons, and the productions of that season." These literary performances obtained for the author the acquaintance of many of the most distinguished persons of the time; but he secured a connexion more important to his worldly interests by some political connections, and was thus enabled to make a thousand per night, which they seem to have appeared without his name, and their titles are not given in any of the biographical notices of him that we have seen. From a passage in the Preface to his Translation of Demosthenes, it may be inferred that he took the White and what is commonly called the liberal side of politics. The biographer of his son in the Annual Obituary says, that 'he is mentioned in Wilkes's Letters as being engaged in some delicate negotiations on the part of the Right Hon. Henry Fox, afterwards Lord Holland.' He was chaplain, it seems, to Lord Holland, and assisted in the education of his son Charles, afterwards the distinguished orator. Through Lord Holland's influence he was presented to the rectory of Barrow in Suffolk; in 1764 he was also appointed joint-chaplain to Chelsea College. He died in 1797.
FRANCKE, RIO. (BRASIL.)

FRANCKE, a celebrated German philanthropist, whose life presents a striking instance of the good which an individual may effect. Francke was born at Lubeck, in 1654. He made such rapid progress in learning that at the age of fourteen he was fit to enter the university, where he devoted himself with great application to the study of divinity and the antient as well as modern languages. In 1691 he became professor of oriental languages at the university of Halle, and was soon distinguished as a prominent member of the parish of Glauchau, a suburb of Halle. The wretched state of his parishioners, who were sunk in the most abject ignorance and poverty, gave the first impulse to his philanthropic exertions. He began by teaching the children, afterwards he gave them time by small donations. He took a few orphans to educate; their number rapidly increased, and as he was assisted by the contributions of many charitable persons, he gradually extended the sphere of his beneficent labors, and formed several establishments for the education of all classes. In 1698 he laid the foundation of the orphan asylum, though he had scarcely any means of completing the edifice, but the necessary funds were constantly supplied by charitable persons. It frequently happened that all his funds were exhausted, and that he had not even sufficient money to pay the workmen, when at the very critical moment he received by post large sums from known or unknown benefactors. He was fortunate in having a director who could control neither the magnitude nor the intricacy of his undertaking, but many who zealously assisted him in his labours. Francke was a man of mild and cheerful disposition, agreeable manners, and exceedingly laborious. He punctually attended to his academical lectures, and was equal at all duties connected with the management of the various affairs and extensive correspondence engrossed all the day, and it was only late at night that he could occupy himself with his literary labours, the earnings of which he always devoted to charitable purposes. The greater part of his works, however, were published also, and he learned works on divinity in Latin. Francke died in 1727, and the following establishments which now exist at Halle owe to him their foundation and bear his name: 1, the Orphan Asylum, in which, since its establishment, 4,500 poor orphans of both sexes have been gratuitously educated; 2, the Pedagogium, an institution for the education of young men of the higher and middle classes, founded in 1696; 3, the Latin School, established for the education of children not belonging to wealthy families, and divided into two, the lower and upper; 4, the School of arts and girls; 5, the East India Missionary Establishment; and 6, the Cansteinian Biblical Institution. This last establishment was the forerunner of Bible Societies. It was founded by Baron Canstein, a German nobleman, who, having lost his life in the service of the British East India Company, became by his intercourse with Francke religiously disposed, and by his exertions and the aid of subscriptions established the biblical institution of Halle, in order to promote the reading of the Scriptures among the poorer classes. This institution possesses a number of stereotype plates, from which a certain number of Bibles is continually struck off: this institution furnished, in the above-mentioned manner, from its establishment in 1712 till 1834, a sixth part of all Bibles with above six millions of New Testaments. The profits derived from the sale of those Bibles go to the support of Francke's institutions, which derive a considerable income from lands and other charitable gifts bequeathed to them, chiefly by persons who find Francke's labors useful; the profits from printing, and publishing establishment, which is the property of the above-mentioned institutions.

FRANCOCAECEA, a very small natural order of Exogens, consisting of the genera Francoea and Testula only. They were discovered by the South African naturalist Burkenroad, in November 1818. The plants have lanceolate leaves and a capose indumentum. The calyces and petals are four; the stamens four times as numerous and hypogynous, half of them being rudimentary. The pistil consists of four carpels adhering by their inner angles, with a sessile four-lobed stigma, and covered in the axils and contain a minute embryo lying in a mass of fleshy albumen. The station of Francoacea in a natural arrangement is unsettled. Rosaeae and Crambeaeae seem to be the favourite orders to which they are apprised; but
we rather regard them as a part of the alluminous sub-
class, serving to connect Papaveraceae with Droseraeae and
Primulacaeae. [Exogens.]

FRANKEP. [Friesland.]
FRANKHAMOGEN, a species of tenure. The term sig-
nifies 'free ains,' and the tenure is that by which a re-
ligious corporation, aggregate or sole, holds lands of the
donor, to them and their successors for ever. The services
which they were bound to render for their land were not
clearly defined, but were only in general to pray for the
souls of the donor and his heirs, dead or alive; they did no
fealty, which was incident to all other tenures. [Feudal
System.]
The tenure by Frankamoign was excepted by name in the
stat. 12 Car. II., which abolished military tenures, and it
subsists in many instances at this day. It is very distinct
from all other tenures, being not in the least degree feudal,
but merely spiritual; for if the services be neglected, the
law gives no remedy by distress or otherwise to the lord
of whom the lands are helden, but merely a complaint to the
ordinary or visiter to correct it.

Donations by this tenure are now out of use, for since
the statute of Quis Empores (18 Ed. I.), as it is said by
Littleton, none but the king can grant lands to be so holden.
(2 Bl. Com.)

FRANKENBERG, in the bailiwick of Chemnitz, in the
kingdom of Saxony, is an agreeable town situated on the
Zschopau, and in a picturesque valley: it is well built and
regularly laid out, and contains about 430 houses and
5200 inhabitants. Next to Chemnitz it has the largest factories
in Saxony for printing cottons, and employs upwards of
five hundred hands in this branch alone: it also manufactures cottons,
linens, and leather, and has extensive bleaching-grounds in the
vicinity. The copper-mines near it produce but small
quantities of the metal.

FRANKENIAE: a small natural order of Exogena,
allied to Sileneae and Linacea; with a procumbent habit,
small leaves, and very often minute flowers half hidden
among the leaves. They are all furnished with a tubular,
rhomboid calyx, and that, together with their having five petals:
a definite number of hypogynous stamens, and a one-celled
capsule bursting into valves, to whose edges the seeds ad-
here, gives them a distinctly limited character. The species
are chiefly found in the south of Europe and north of Africa;
they however occur in various other parts of the world; one
species from New Holland, Frankenia pauciflora, remark-
picture gallery, botanical garden, seven schools, &c. The population was 4610 in 1817; 5508 in 1831, and is at present about 5700. The manufactures of the town consist of woolen stuffs, linens, leather, stockings, tobacco, liqueurs, &c., and it has a good trade in corn, wine, woolens, &c.

FRANKENTHAL [Rhineland, Circle.]

Frankenthal, the capital of a small republic in the western part of central Germany, has an area of about 91 square miles. It is bounded on the north and north-east by the province of Hesse, on the south-east and south by the province of Nassau, and it is connected with the town of Main at the north by the duchy of Nassau and part of Grand-ducal Hesse. It is supposed to date its origin from the times of the Merovingian princes. Charlemagne built a palace in the town, in which he held a council of the church in the year 838, and Leopold the Third (1319), Emperor of the Holy Roman Empire, confirmed the privilege of Frankfort on the Main, and this privilege is still enjoyed by the town. The town is divided into two main districts, the Roman palace, which was also built here by its sovereigns, who held their courts of ceremony under its roof from time to time, though it was not their fixed abode. In the records of the middle ages it is often referred to as the seat of the curia. The district of the Roman palace is known as the Standard, and that of the Roman palace as the Stadtkreis. The town consists of a great many buildings, which are still in a good state of preservation, and are covered with a crust of lava, has been at every point brought into a high state of productivity. It is watered by the Main, and raises corn, though not in quantity sufficient for the requirements of the town. The inhabitants are mostly engaged in manufacturing and mechanical pursuits, the most important of which are the manufacture of leather, hosiery, and bleaching and dyeing. The town is also the seat of the See of Frankfort, and is the residence of the archbishop of Mainz, and is the seat of an ecclesiastical college, as well as of a university.

The constitution, promulgated on the 15th May, 1816, and solemnly sworn to on the 16th October following, provides for the complete and perfect freedom of the four classes of the town. This freedom is not limited to the rights of the nobility, but extends to the whole population of the town. The town is divided into three classes, namely, the burghers, the guildsmen, and the tradesmen. The burghers are the proprietors of the town, and are entitled to all the rights and privileges of the town. The guildsmen are the occupants of the land, and are entitled to all the rights and privileges of the land. The tradesmen are the workmen of the town, and are entitled to all the rights and privileges of the workmen.

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of caravanners, charisseurs, and firemen, six of infantry, and a veteran corps composed of citizens between the ages of 50 and 60.

The Lutherans have a consistory, and the reformed Lutherans two presbyteries, which manage the revenues of the churches and direct all ecclesiastical affairs. The Roman Catholic clergy and flocks are concentrated in the chancery of the bishop residing at Limburg on the Lahn.

Frankfort is a member of the German Confederation, and in conjunction with the other free towns, Lille, Bremen, and Hamburg, occupies the 17th place in the financial scale of the Rhine. Its Catholics and Prot-estants, though not numerous, are of the same religion and movement. The city of Frankfort is on the right bank of the Main, which across there is a stone bridge which unites it with the suburb of Sachsenhausen. It lies in 50° 6' N. lat. and 8° 35' E. long. The valley and the town are commands on the north with the river, the old Rothenberg, and at some leagues distant behind them by the range of the Taunus, and, on the side of Sachsenhausen, in the south, by the Mühlberg, Sachsenhausenberg, and Lorchberg, offsets of the Odenwald. The old walls and ramparts with their stagnant ditches were built between the years 1800 and 1812; and the site converted into spacious park-like grounds; the glass box is now covered with vineyards and gardens, which are externally bounded by a broad road; and beyond this road the adjacent grounds are embellished with public and private gardens. Frankfort itself is about 1530 acres in length along the Main, 1890 in width, and 4000 in circuit; Sachsenhausen is about 1200 in length, but of unmeasurably breadth.

The principal public buildings are nine large gates, which formerly ran between cumbrous quadrangular towers; most of these have in modern times been replaced by handsome buildings, modelled from the antique temples of Athens and Rome, &c. Of the nine entrances, Frankfort and Sachsenhausen on the north-eastern entrance is the monument erected by Frederick William II., king of Prussia, to the memory of the prince of Hesse-Philippolis and his gallant followers, who fell at the successful storming of the town on the 2nd December, 1744; it consists of a quadrangular block of German marble, surmounted with appropriate trophies, bearing a commemorative inscription, and resting on an artificial rock. The Bockenheim gate, which is the western entrance, is built on the model of the temple of Apollo Vesta, at Tivoli, and the Upper-Main gate, on the porches of the Campus Militum at Pompeii. The adjacent buildings are neat structures appropriated as guard-houses and for the use of the custom-house officers. The Echschinel gate, the north-western entrance, is the only structure of a sort, with its antient garrison and a lofty lantern tower, crowned by five turrets, and is a fine specimen of the German architecture of the fourteenth century.

Frankfort, inclusive of Sachsenhausen, contains nearly 1600 houses; between 400 and 300 of them being in the latter suburb. They form 6 large and 14 minor squares or open spaces, and above 220 streets and lanes, and have 113 fountains and wells. The places of worship are 17 in number, namely, 7 Lutheran, 2 Reformed-Lutheran, and 3 Roman Catholic churches, 7 chapels for Lutherans, and one each for the Barmuthers, and one a mosque. The city is divided into 14 quarters, numbered from A to O, 12 within the walls, and 2 in the Sachsenhausen suburb. The Belle Vue and other streets, built along the Boulevards, are a handsome entrance to the more antient part of Frankfort, have been erected since the fortifications were demolished. The largest square, called the Rossmarkt (Horse Market) is surrounded by fine buildings, and connected with the square of the theatre by a spacious avenue of lime-trees. There are mountains in the centre of the Horse Market as well as in the fountain and Roentember. The right bank of the Main, from the upper to the lower gate, which is nearly the whole length of the city, is edged by a spacious quay, and beyond this the huge route, lined with houses. During the fair, a portion of the quay, on which posts of bamboo are erected, presents a scene of the most animated description.

The most remarkable buildings in the town are the Roemer or Guildhall, a irregular structure, with lofty roofs in the old Frankish style. Under its roof are the Walizimmer, or Hall of Election, a spacious and handsomely furnished apartment, in which the electors and their representatives were wont to assemble and partly conduct the business of electing the Holy Roman emperors of Germany from Conrad to Leopold II.; but there was not one left unoccupied for receiving the portrait of Francis II., the last of those sovereigns. A sort of antisea-hall, with a painted ceiling, and fitted up with chairs, in which the Frankforters, open into the Electoral Hall. Here is also the Depository of the Archives, surrounded by walls six feet in thickness. It contains, among other valuable records, the celebrated "Golden Ball," pro-claimed by Charles IV. in 1353, which is written in yellow parchment.

Not far from the Roemer is the new Hall of Justice with its various courts and offices; and south of it, on one side the principal began, of which the walls are still in use as a part of the fortifications, and on the other the great square called the Römerberg, on the site of a palace built by Lewis the Pious, Charlemagne's son, in which Charles the Bald was born and Lewis the German long resided, but of which scarcely any part is extant, save the Chapel of St. Elizabeth, a windowed chamber, 155 feet in length, and 45 in thickness. The present building, which is private property, was raised in 1717. The Brunnefels belongs to one of the old equestrian clubs; the courtyard is used for the Exchange, and the spacious saloons on the first floor are used as two splendid banqueting-rooms. In former times, the walls were lined; it contains, besides banquet rooms of large size, two ostentatious halls, and is the spot where the diet of officers from the states of the German Confederation hold their sittings. The antient House of the Teutonic Knights in Sachsen-hausen, is a sombre massive building in a low situation, not more than 100 feet from the Roemerberg; it is at present the property of the emperor of Austria.

The two large buildings in Frankfort, which were once public arsenals, were stripped of their contents by the French, and are now appropriated to the police as a prison for the last 20,000 common and 1000 political prisoners. It has been used as a prison, is an unugly structure of the early part of the sixteenth century, which disfigures the Parade. At old Carmelite convent, now the quarters of the garrison of the town, has cloisters covered with faded fresco paintings executed in the beginning of the sixteenth century; the Stone House, near the Roemerberg, is a fine remnant of the middle ages, and the Fürstenkemp, near the bridge, may be instanced as one of the oldest buildings in Frankfort. Besides these, the theatre, public library, academy of arts, and public school are situated in new buildings. There is a new hospital, and an orphan asylum, are deserving of attention.

The church of St. Bartholomew, formerly the cathedral, is in the shape of a Roman Cross, of the Gothic order, and though begun in the time of the Carolingian princes, was not finished until the fourteenth century. Its gothic tower, 160 feet in height, is one of the latest models of the Gothic. The colossal statue of the patron saint in this church is reckoned a masterpiece of sculpture. On the right of the grand choir is the chapel, in which the electors are accepted, and in front of the high altar was placed, when he had been crowned and anointed at the high altar. The tower was begun in 1419, and was finished in 1599. At a short distance north of the town, is the public cemetery, laid out like a pleasant ground of shrubs; and adjoining it are new and spacious buildings, arranged for that purpose.

There are four hospitals, one of which is for lunatics and epileptic persons; an orphan asylum, a house of refuge for sick poor, and several other benevolent in-
some fine windows of painted glass. The university, founded here in 1506, was transferred to Breslau in 1810. Frankfurt possesses a gymnasium with a library, an upper or grammar-school, and nine schools for the inferior classes, and the first two of these are orphan schools, as well as a house of correction, and a free school for 300 soldiers’ children, founded in memory of Leopold, duke of Brunswick, who lost his life here in April, 1755, while endeavouring to save a man from drowning. A monument was also erected to him at the eastern end of the bridge across the Oder. In front of the Grosser gate is a three-sided pyramid, resting on a block of stone, which was raised by the freemen’s lodge in 1776, to the memory of Kiesew, the poet, who fell in the battle of Kunersdorf. The manufactures of the town consist of wool, brass, iron-ware, sugar, gloes, stockings, linen, leather, &c.; its trade is extensive, and the three periodical fairs, instituted in 1233, are well frequented, particularly by Polish dealers. The inhabitants are engaged also in the navigation of the Oder, on which are 2000 vessels and craft annually pass Frankfurt.

FRANKFORT, in America. (Kentucky.)

FRANKINCENSE, Common, is the produce of the Abies excelsa (Dec.), the Pinus abies (Linn.), common spruce fir, from which it either exudes spontaneously or more abundantly by pressure. When it first flows out, it is liquid, but on exposure to the air concretes, and is collected during autumn and winter. It occurs in two states, in tears (Thus, or Olbanum sylvestre), and in large irregular lumps, or compressed cakes. When recent, the colour above is light yellow, or inclining to yellow subduaneous, soft, tenacious, and glutinous: by the action of time it becomes hard, and even friable, the colour having deepened into art orange hue. Of the heat of the land it softens, and by a higher temperature liquefies. It possesses the property of diuretic. It is insoluble in water, but completely soluble in alcohol with the aid of heat.

It consists of two kinds of resin mixed with oil of turpentine. By melting it in water, and straining it through strong cloths, it is deprived of much of its oil, when it is used as a medicine. It was given in chronic states, especially in the complaint of the heart, in the form of an extract, and was esteemed of great service.

It is scarcely now used internally, but is irritant and diuretic. Externally it is subhebatic, and consequently enters into the composition of many plasters.

For the frankincense the fumes of the antiques, as seen Boswellia; also Olbanum, as the substances distinguished by this name (derived from the Arabic løoban) were of different kinds, and procured probably from Africa and Arabia, as well as from India.

FRANKLIN, Benjamin.

FRANKLIN. In the reign of Elizabeth a franklin was a freeholder, or yeoman, a man above a vassal or villain, but not a gentleman. He is mentioned as of this description in several passages of Shakespeare’s plays. In earlier times the term was of a different signification; it was then understood to have been distinguished from a common freeholder by the greatness of his possessions. Chancer’s franklin was a rich and luxurious gentleman, a chief man at the sessions, and had been sheriff, and frequently knight of the shire.

An household, and that a greate was fire, 
Drick Julian he was in his countrey. 
His broke, his ale, was alwayes open; 
A better rayned, man was no other man. 
Without he make meater was his hose, 
Of fishe and freshe, that he alwayes. 
It spreded in his houes of men and drigger, 
Of alle deeltriers that mowr ofr of their. 
After the mony sesons of the 
So change he his mate and his sappone. 
Ful alwys a lat parcht he had in his 
And many a terme, and many a love in steare. 
We noo sette as saundr, to have a 
Poitant and sharpe, and rell all his on. 
His take dominall in his halle alwayes. 
Shole rode covered all the sappone. 
At sesions there be lord and sice. 
Shere often he was knight at the shire. 
An eelace and a gieriale all of sile. 
Hone broth berte him, and lit him 
A shervre bede he ben, and a coutour. 
Was noe when swich a worthy rayvenas.

Fortescue, “De Legibus Angliam,” c. 29, describes the franklin as “Pater familias—magnis dignitu possidens.” (Nan’s Glossary in ovo; Tytwhall’s Notes on the Canleyian Tales, 1795.)

FRANKLIN, BENJAMIN, born at Boston, in New England, January 6, 1706, was the son of a tallow-chandler in humble circumstances, but intelligent and strong-minded. As a boy he had a great desire to go to sea; but he also dis—

M 2
played a fondness for reading, which induced his father to
apprentice him to another son, who was a printer at Boston.
He was a diligent scholar, and his mind was neither
dulging, weaned him from the love of the sea; and he
practised great abstinence and self-denial, the better to
improve his opportunities of study. At the same time he
made himself an able workman. The two brothers how-
ever, were not on terms of such close intimacy as between
which the younger, as he himself says, did something to
prove by his industry. These quarrels led to a step,
which, with his usual candour, Franklin has plainly
related, and declared to have been dishonourable. His
industry was, however, such as to outstrip and leave behind
him the usual state of his trade, and to enable him to
find employment in Boston. He therefore went away
secretly, without the consent of his parents, in 1723,
and after a vain trial to find work at New York, engaged him-
self to an obscure printer in Philadelphia, named Keimer.
Tendence to revealed religion. About this time over a
half: but being induced by deceptive promises of patronage
to think of setting up for himself as a master printer, he
sailed for England, in the beginning of 1725, to
purchase the necessary stock in trade. On his arrival it
was discovered, inasmuch as his pretended friend had neither the power nor the wish to help him;
and being destitute of money or credit, he again found
employment as a journeyman printer in London. His own
account of this portion of his life is, that it was an admis-
sion into a useful and flourishing industry, which he will
read with pleasure.
Having gained the good will of Mr. Dunham, a merchant
of Philadelphia, he returned thither as that gentleman’s clerk,
July, 1726. He now considered his prospects to be pro-
ming: but in 1727, Mr. Dunham died, and Franklin being
unable to do better, returned to his old trade and his old
master, Keimer. In the course of two years he gained
credit and friends to enable him to set up in business on
his own account; and September 1, 1736, he married a young
woman, to whom, before his voyage to England, he had been
attached.
Franklin had early renounced Christianity, nor does it
appear, though he has unequivocally recorded his belief in
God and in a future existence, that he ever again gave
courage to reveal his religion. About this time over a
great change took place in his views. In London he had
written a pamphlet to prove (we quote his words) ‘from the
attributes of God, his goodness, wisdom, and power, that
there could be no such thing as evil in the world;’ that
vice and sin were equally unnatural, and not merely
vain distinctions.’ Reflection on the conduct of other
free-thinkers, by whom he had suffered, and on some parts
of his own life, which he had candidly related and con-
demned, brought him to a different way of thinking; and,
his own experience taught him the profound truth of pro-
sperity and sincerity in transactions between man and man were of
the utmost importance to the happiness of life; and I resolved
from that moment, and wrote the resolution in my jour-
nal, to practise them as long as I lived.’ This resolution
he has kept. His honesty and straightforwardness have
passed unquestioned, even by the numerous enemies whom
his religious and political opinions raised against him.
Unceasing industry, business-like habits, a large fund
of disposable talents, general information, and readiness in
the use of language, procured to him a degree of
credit which was not only advantageous to him in his
travels, but also to his affairs; for it procured him a
large circle of friends, and raised him from poverty to
affluence. He engaged in hig-
nature; edited a newspaper, wrote a pamphlet toadvocate a
change of the currency, printed in 1722 his translation of
Benjamin Franklin’s Almanac, of which the distinguishing feature was a
series of maxims of prudence and industry, in the form of
verbs. It was continued for 25 years, and is said to have
reached a circulation of 10,000 annually. These maxims,
collected in one volume, called ‘The Way to Wealth,’ obtained
uncommon popularity, and have been translated into various
languages.
Franklin’s turn of mind was eminently practical. He
said with truth, ‘I have always set a greater value on the
results of experiments or observations than on their
theory or reputation.’ Not that he joined in the vulgar prejudice
of acting theory and practice in opposition, for he was bold,
speculative, and inquirers in physical as well as metal-
physical science. But science, he thought, might be
made useful to common life, and he never neglected his own
affairs, industry and economy of time enabled him to originate, or take an active
part in supporting, a variety of projects for the public good.
A list of the chief of them will show, shortly and clearly,
and the sort of objects his benevolent exertions were
directed.
1723. Set on foot and procured subscriptions for the first
public library, incorporated in 1742 by the name of The
Library Company of Philadelphia.
1728. Established the first association for extinguishing
fires; and, at a later period, the first Fire Insurance
Company.
1739. Raised subscriptions for the foundation of a public
academy, the schools of Pennsylvania being few and bad.
This was the origin of the present university of Pennsyl-
vana.
1732. Raised subscriptions and procured an auxiliary
grant from the legislature to establish the first hospital in
Philadelphia; a scheme suggested in the first instance by
a physician of the city, who had not influence enough to work
it out.
1724. Proposed a plan for a union of the American pro-
vinces against invasion, in which a germ of the future Union
of the United States can be traced.
He was also the friend of many good notions, though not carried into effect at the time.
It was approved by a species of congress from six of the
provinces, but rejected both by the colonial assemblies and
the British government.
1737. Raised subscriptions for the purpose of having the
experiments which had attracted so much notice in Europe repeated in
America.
1747. He sent a series of letters to England, in which he noted the phenomena observed by
experiments, and the results of his theory, to the Adams
brother of the printer’s family; with a request that the
former state he called positively, in the latter state nega-
tively electrified. This theory he used to explain the
action of the Leyden jar; and though not universally admitted.
[Electricity, p. 336], it at least furnishes a simple and
rational explanation of the phenomena observed by
Franklin in the experiments (Library of Useful Knowledge, *Electricity*, sect. 49.)
In 1749 he had conjectured the identity of lightning and
electricity, and suggested the idea of protecting houses by
pointed conductors, but did not prove it till 1752.
He was waiting for the erection of some sharp points upon
which an insulated iron rod might be placed, in hope that on the
passage of a thunder-cloud overhead, sparks might be
taken from the rod, as from a charged conductor, when it
occurred to him that by tying a kite, pointed with iron,
and raising it by a line fixed to a tree, a similar effect
might be produced. But, on recalling his views were correct, he drew down the string.
He tied a key to the end of the hempen string, insulated the whole
apparatus by adding a piece of silk to the end next the
hand; and the experiment succeeded. Sparks were taken
from the key, a Leyden jar was charged, and the pheno-
mena exhibited were identical in both, as if an electrical
machine had been used instead of the kite. He varied the
experiment by fixing an insulated iron rod at the top of his
house; and immediately proceeded to turn his discovery to
account by publishing a plan for defending houses from
lightning by the use of pointed conductors.
His character, in reference to this branch of his pursuit,
has been described in the following terms by Sir H. Davy:
‘A singular felicity for induction guided all his researches,
and by very small means he established very grand truths.
The style and manner of his publication on (Electricity)
almost as worthy of admiration as the doctrine it contains. He has endeavoured to remove all mystery and obscurity from the subject. He has written equably for the uninstructed and for the philosopher; and he has rendered his details amusing as well as penetrating, as well as significant. Science appears in his language in a dress wonderfully decorous, the best adapted to display her native loveliness. He has in no instance exhibited that false dignity by which philosophy is kept aloof from common applications, and he has made his experience general enough to have been effective in the common habitations of man, than to preserve her merely as an object of admiration in temples and palaces.' (Life, by Dr. Davy.)

Burns, then, was a genuine scientific labourer we can only admire. They treat of many branches of meteorology, maritime phenomena, shipbuilding and various subjects connected with navigation, as the Gulf Stream, and the effect of oil in stilling waves; of the proper construction of stoves and chimneys, which are used as warmers of the houses, and one of his hobbies; of the art of swimming, which, being himself an excellent swimmer, he was anxious to recommend as a universal branch of education: subjects consonant to his practical character, and most of them directly applicable to the increase of human comfort. Of a few these matters nearly fill the second volume of his collected works; his electrical treatises and letters occupy the first volume, and his moral, historical, and political writings the third.

It is to return to Franklin's private history; the increasing estimation in which he was held, was manifested in his successive appointments to different offices. In 1736 he was made clerk to the General Assembly of Pennsylvania; in 1737, postmaster of Philadelphia; in 1741 he was elected a fellow of the Royal Society of London; in 1742 he was elected a member of the Pennsylvania Assembly; in 1745 he was appointed deputy postmaster-general for the British colonies.

When he first became a member of Assembly, that body and the proprietary governors, Penn's representatives [Pennsylvania], was known in Pennsylvania and the adjacent states to the immunity from taxation claimed by the latter. In this Franklin took an active part. 'He was soon looked up to as the head of the opposition, and to him have been attributed many of the spirited replies of the Assembly to the messages of the governors. His influence in that body was very great. This arose not from any superior powers of eloquence; he spoke but seldom, and he never was known to make any thing like an elaborate baragone. His appeals to reason were short, and in his letters to the Proprietaries Assembly, to manage the controversy before the privy council; and was successful: it was decided that the estates of the proprietaries ought to pay their fair proportion of the public burthen. He remained in England after this question was settled, as agent for Pennsylvania; and his conduct was so highly approved that Massachusetts, Maryland, and Georgia, severally appointed him their agent. By this time his name was well known to European philosophers. He was chosen a member of the Royal Society, and in 1731, President of the American Philosophical Society; and in 1737 he was appointed by Mass, Maryland, and Georgia, severally appointed him their agent. By this time his name was well known to European philosophers. He was chosen a member of the Royal Society, and in 1731, President of the American Philosophical Society; and in 1732 he was made a foreign associate of the Académie des Sciences, and the universities of Oxford, Edinburgh, and St. Andrews, admitted him to the degree of D.C.L. On his return to America, he was received with great respect and affection, and he was set apart to two important services to his country, and one of his death. He was carried off, after a short illness, by a disease of the lungs, April 17, 1790, aged 84.

Dr. Franklin's published works were collected in three volumes, with his fragment of his own life, continued by his grandson, William Temple Franklin, by whom, after long delay, an excellent 'Life of Franklin,' including many of his miscellaneous writings, and much of his correspondence, has been published. The Biog. Universelle contains a long memoir of him by Bolt. For some remarkable particulars the particular paper left behind him by Franklin, see Tucker's Life of Jefferson, vol. i. p. 338.

FRANKLINITE, a mineral which occurs in attached crystals, granular and massive. The primary form of the crystal is a cube; its colour is deep iron black. Optical Lustre metallic. Specifi gravity 4.87, 4.99.
6'0. 6'5. Streak deep red-brown. Cleavage parallel to the planes of the regular octahedron, but very indistinct. Fracture conchoidal. Magnetic, but without polarity. The massive varieties are amorphous. Structure granu- lar, compact. This mineral is found at Franklin, New Jersey, North America.

According to Berthier it consists of,—

Peroxide of iron ........................................ 66
Red oxide of manganese ................................ 17

FRANKS. [Fr.]

FRASCATI, a town of the Campagna, eight miles cast- south-east of Rome, situated on the north-west slope of the Tusculan Mount. On the summit of the mountain, which is 2000 feet above the sea, and about two miles above Frascati, are the ruins of ancient Tusculum, a town of Latium, built long before Rome, and often mentioned in Roman history. It was coasted, and after the Romans took Tusculum, and destroyed it. Remains of the walls of houses, and of the citadel, are still extant, as well as a small theatre, and a curious crypt, with a kind of arched roof of primitive construction. (Gell's Topography of Rome and its Vicinity.) The hill of Tusculum is volcanic, and is separated from the central mass of the Alban mountain by the Alban valley, through which runs the Via Latina.

After the destruction of Tusculum, the inhabitants built themselves huts on the lower slope of the hill towards Rome, and covered them with 'frasche,' boughs of trees, from which the modern town has taken its name. It has some good buildings, 4000 inhabitants, and is a bishop's see.

The air is wholesome, the place being above the region of malaria. The soil is, as is the case in all the district of Frascati, very fertile, and is cultivated with almost every tree and vegetable, and is the garden of Rome, which is not exactly known; some believe it to have been near Grotta Ferrata, on the road from Frascati to the Alban lake; others place it near La Rufinella, on the hill of old Tusculum. There are remains of ancient buildings all about the place, and an abbey, the church of which is called S. Francesco.

It contains a town, with a church, in which are preserved the relics of St. Francis, and were therefore commonly called Tertiary; so likewise the order of the Fraticelli, who were anxious to be considered as the only true followers of St. Francis, had a great number of Tertiary attached to their cause. These Tertiary, in half monastic, were ascetics; those of the Bicazoi, in France Guineus, in Germany Beghards or Beg- hards. This last appellation was generally applied to them. The Tertiary differed from the Fraticelli not in their opinions, but only in their manner of living. The Fraticelli were of the order of Beghards, subject to the spiritual jurisdiction of the popes, whilst the Bicazoi or Beghards, as well as the Franciscan Tertiary, excepting their dirty habits and certain maxims and observances which they followed in compliance with the rules of their patron saint, lived after the manner of men, and were therefore engaged amongst the people, whilst the Bicazoi or Beghards, as well as the Franciscan Tertiary, excepting their dirty habits and certain maxims and observances which they followed in compliance with the rules of their patron saint, lived after the manner of men, and were therefore engaged amongst the people.

FRAUSTADT. [Pers.]

FRAUTXINUS, the genus under which the common ash is comprehended, is a collection of arborescent plants inhabiting various parts of the more temperate regions of the globe, and their mansions, both in the old and new world, are unknown in a wild state. Although, if strictly limited, the species are destitute of corolla, yet the genus does, in fact, belong to the natural order of the olive and lime, a transition to which is afforded by what are commonly called botanists, because they have been derived from Fraxinella or Fraxculus, an Italian nickname which was applied in the middle ages to all persons who, without belonging to any religious order, assumed a sanctimonious appearance.

FRAUXINUS, True Ashes.

Of these the most important is the common ash, or Fraxinus excelsior, a tree inhabiting the cooler parts of Europe from Great Britain to a considerable distance through Asia. It is said to exist in Japan in a wild state, but this requires confirmation; it does not occur in North America, but is commonly found in woods and thickets in all the temperate regions. The ashen is one of the most useful of our British trees on account of the excellence of its hard tough wood, and the rapidity of its growth. In its appearance too it is highly graceful for a European tree, often resembling in its slender, graceful outline thin fine branches of the arboles- tal regions. Everyone who has seen the beautiful effect of the ashes mingled with the ruins of Netley Abbey, near Southampton, must have been struck with this peculiarity. The principal objection against their being planted in a garden is the injury done to the plants which grow in its neighborhood by saprophytically exhausting the soil of all its organic materials. In consequence of this few plants will thrive, or even grow very near it; and hence the improvidence of the common species of planting the ashs in hedgerows, where the extent of its roots may always be distinctly traced by the language and
paleness of the crops that stand near it. Many varieties, or so many of it, are known to cultivators, and many more might easily be collected if it were worth the while; for it sports very much in a wide soil. The most striking of the reputed varieties are the following:

1. The weeping; with all the characters of the common weeping willow. It is exempt from its dwarfness; in this respect it surpasses the true variety; in the latter the leaves will soon reach the ground and form a natural arbour. This is said to have originated accidentally in a field at Gunning, in Cambridgeshire.

2. Both with all its leaves simple, broad, ovate, coarsely serrated, and puckered. Nothing can well be more unlike the common ash than this, which nevertheless appears upon good authority to be merely a seedling variety. Out of leaf it is hardly distinguishable by its bark, which is brown from its youth. This is not the case with the true variety, for in the latter the leaves are soon formed, and a profusion of white delicate blossoms, which give them a strikingly beautiful appearance. The species inhabits the southern parts of Europe, especially the woods of Calabria and Apulia, and in those countries flowers in April. *Fraxinus ornus* is universally distinguished as a second species of this genus; differing in its leaves being much longer, the leaflets roundish, ovate, acute, not cuspidate, entire, and rather crenate at the base, and not at all hairy underneath. In flowers it is much the same. It is a native of Calabria and elsewhere in the south of Europe.

These two plants are interesting as producing the sweetest laxatives in the apothecaries' shops under the name of manna. It is a secretion from the leaves and branches; and, according to Fée, is caused either by artificial wounds, or by the puncture of an insect. Both species yield the substance, but, according to Tenore, that from *Fraxinus rotundifolia* is of better quality than the other. Fée thinks that it is also yielded by both *Fraxinus excelsior* and *pamphorria*, and this corresponds with the assertion of Dr. Forthgill, who saw the substance collected.

In Calabria and Sicily, says this physician, 'in the hottest part of the summer, a man who is driven out of the leaves, and from the bark of the trunk and larger branches of the *Fraxinus*, or *Calabrian Ash*. The *Ornus* likewise affords it, but from the trunks and larger branches only, and that chiefly from artificial apertures; whereas it flows from the *Fraxinus* through every little cranny, and bursts through the large pores spontaneously. The different qualities of the manna are from different parts of the tree.'

Besides these, some other species of *Ornus* exist in the north of India and China, but they are too little known to require notice here.

See an elaborate account of these genera in Loudon's *Arboretum et Fruticetum Britannicum*, p. 1213.

FREDERICK I., Emperor of Germany, surnamed Barbarossa, was born with the title of Conradus in the year 1123. Though Conrad was not deficient, either in warlike spirit or in talents, an unhappy concurrence of circumstances had prevented him from regaining, as might have been wished, all the domestic and foreign conquests of his emperor. So many important affairs, both in church and state, demanded immediate attention, so many difficulties were to be overcome, that it required a man of no common energy to accomplish such a task and of that man himself. He did not recommend to the princes of the empire his young nephew, Frederick, but his nephew Frederick, son of Frederick, duke of Suabia, by Judith daughter of Henry duke of Bavaria, who had already given proofs of his personal courage. At corning ... and crowned at Aix-la-Chapelle five days after. In the second year of his reign, Frederick settled the dispute between Canute and Sueno in the very heart of the latter, whom he however compelled to do homage to him as his vassal. But his chief attention was directed to Italy. Complaints were made by the Apulians against Roger King of Sicily; and some citizens of Lodi saw to it, and represented in strong colours the inexpedience of the Milanese. Frederick sent an envoy with a letter, ordering the Milanese to refrain from such proceedings, but they tore...
his letter to pieces, and his envoy saved his life by timely flight.

The town and other important considerations called him to Italy in 1155, where he held an assembly in the plain of Rome, to receive the homage of most of the great Italian lords and principal cities. In this, his first expedition into Italy, he, in some measure, humbled the Milanese, but the emperor, although he set forth with the utmost speed to overtake him, received on the way the submission of many cities, and in particular inflicted severe chastisement on Asti. Having taken Tortona, after a two months' siege, he allowed the inhabitants to retire, but gave the place up to plunder, after which it was entirely burnt and desolated. After leaving a crowned king of Italy at Pavia, he advanced rapidly towards Rome, where Adrian IV, had just succeeded pope Anastasia. The city having been excited by Arnold of Breva to dispute the authority of the pope, Adrian, who was a man of great resolution, communicated his designs to his partisans, who were in consequence expelled by the Roman senate, and Arnold being subsequently taken prisoner, was by the emperor delivered up to the pope, who caused him to be burnt alive. Having had an interview with the pope, at which he recourse, and encouraged the other cities, truce his authority at Rome, and received the imperial crown from his hands, Frederick set out on his return to Germany. His first care was to restore the peace of the empire, which was disturbed by a dispute between the archbishops of Salzburg and Erfurt, which latter, likewise, ended, to the satisfaction of all parties, a most important question respecting the duchy of Bavaria. He had resolved to divide his empire, which, she had no children; but this not being a sufficient ground for a division, the emperor, after an interview with the emperor, was compelled to give his consent. The title of emperor was pronounced by Cardinal Joseph Orsini and several prelates. Frederick then proposed to marry a Greek princess, but this negotiation failing, he married in 1156 Beatrice, heiress of Bologny, by which alliance he annexed that rich kingdom to his dominions. Frederick then conducted his dominions, and the first six years of his reign restored the empire to the same power and glory which it had never lost, and the peace of Europe was preserved in many respects.

The affairs of Germany being settled, Frederick found it necessary again to go to Italy, where the Milanesian cruelly oppressed the towns which would not submit to their orders. In 1158, Frederick with an army of 100,000 infantry and 15,000 cavalry, laid siege to Milan, and the inhabitants, notwithstanding some previous successes, were reduced, after an obstinate resistance, to offer submission, which was accepted. But they again rebelled, and Fre- derick resolved to make an example of this haughty city, which he thought had tempted and encouraged his desertion. Frederick's decision was that Milan should be a desett: that all the inhabitants should leave the city in a week, and settle in four villages, ten miles distant from each other. It has been often asserted that the city was razed to the ground with the exception of some houses, but we must believe the contrary, for it seems to be an exaggeration. The city was not plundered; the order or permission for the work of destruction was only to the fortifications, and even then, of these a considerable part was left standing. But the power of Milan was broken. His fall encouraged the other cities of the empire, who, on his death, abandoned the rich kingdom of his ancestors.

While Frederick was thus engaged, pope Adrian, with whom he had been on very friendly terms, on which a schism arose: some of the cardinals choosing Victor IV, who was inclined to the imperial interests, and the others Alexander III. Frederick, who considered him elf as protector of the church, called a council at Pavia. Adrian, not recognizing this council, which consisted of fifty or sixty German and Italian bishops, it proclaimed Victor IV as the true pope, who was acknowledged by the emperor. Alexander communicatized the emperor and all his partizans; but though he was recognized by the kings of France, England, and the states of Lombardy, which Frederick's superiority obliged him to seek refuge in France. When the emperor returned to Germany he found that discus- sions had broken out between several of the princes, who had been appointed to succeed him; and having resolved to meet Louis the Young, king of France, at Lyons, near Dijon, where they had agreed that a council should be held to terminate the schism in the church, by deciding between the two popes, who were to appear, accompanied by the two sovereigns, their protectors. This plan however failed. The death of pope Victor IV, in 1164 seemed to offer a favourable opportunity for reconciliation between Frederick and Alexander III, which the former was inclined to embrace, but before his orders reached Rome the emperor was seized with a violent disease, and was forced to proceed to the election, and the choice fell on Guido bishop of Crema, who took the name of Paschal III, and was acknowledged by the emperor. Frederick crossing the Alps in 1165 marched direct to Rome, where Paschal was not yet installed, and forced the emperor and his commissary Beatrice. The power of the emperor now seemed to be greater than ever, he had hoped entirely to reduce the cities of Lombardy, which he resolved to suppress, and thus to end the disorders in Saxony, and undertake a successful expedition against Bolestanus duke of Poland, he prepared for the fourth time to cross the Alps. The negotiations in Italy had not led to any favourable results. After Frederick's return to Germany, pope Paschal died, and the cardinals chose a new pope, who bore the interests of the emperor chose for his successor Calixtus III, a man very inferior in talent to Alexander. But the latter had so seduced his power, that Frederick thought he would remove the schism, by attempting a reconciliation. The cities of Lombardy, encouraged by Alexander, extended their confederacy, and built a new city, which they called Alexandria in honour of him. Only Genoa and Pisa remained true to the emperor, who, to prevent matters worse, and his army, after many afterwards; however, to the unspeakable joy of the army, he appeared again at Pavia, where the emperor had already put on mourning.

This loss induced Frederick to think of peace. He threatened with Alexander, whom he acknowledged as pope, and who relied him from the ban of excommunication. He then, by the mediation of Alexander, concluded a treaty, or rather a truce, for six years, with the cities of Lombardy, on very advantageous terms, for he in fact lost nothing essential, except that he gave up the cause of Calixtus, who obtained a rich abbey. On his return from Italy, while he passed the winter, he went to Burgundy, and embarked at Arles, and had himself and his consort crowned king and queen of Burgundy; whence he returned to Munich, which was on the 24th of January of his accession. The peace of the empire being established, the princes and bishops who had sided with Alexander became reconciled to the emperor; but new troubles arose in Saxony. Henry the Lion formed great plans to extend his power, but was in the end forced to give up. At first he appeared before the emperor and the German princes, to whom Frederick had made a promise to decide nothing
respecting Henry without their approbation. The sentence was that he should be relieved from the ban of the empire, retain his family dominions of Brunswick and Lüneburg, but, for the preservation of peace, should go into banishment for seven years, which, at the intercession of the pope and the emperor, and the intercession of the German princes, was reduced to a year. Henry accordingly went with his wife and children to his father-in-law the king of England.

The truce with Lombardy now approached its last year. After several occurrences in Italy, not unfavourable to Frederick, Alexander III. died in 1189, and was succeeded by his son, Lucius III., who was much inferior to him in ability and energy. The hostile dispositions of both parties had greatly abated during the war, and the emperor having summoned a diet of the empire at Constance, a definitive peace was concluded by the emperor, and the remnant of the crusade, after one year after the peace of Constance, order and tranquillity everywhere prevailing, the emperor called a general diet at Meritz, one object of which was to establish his five sons. This diet presented a scene of unrivalled festivity and splendour. The Electors, the emperor's five sons, the archbishops, bishops, princes and nobles of Italy and Germany, ambassadors from foreign sovereigns, 40,000, some say 70,000, knights from all parts of Europe, and countless multitudes of people of all classes were here assembled, the whole being entertained by the emperor and his courtiers, wonders of which have been handed down from generation to generation, and songs composed on that occasion are still sung on the banks of the Rhine. A year after this diet Frederick again went to Italy, where he was received with the most honourable welcomes, and a resolution was even concluded an alliance with Milan. But new disputes arose with the papal see, through Frederick's refusal to grant to Lucius, and afterwards to his successor Urban III., the sovereignty of the territory called St. Peter's Patriarchy. Frederick now saw himself surrounded, and, by the deposition of his son Henry with the daughter and heiress of William king of Sicily, that the pope did not venture to proceed to extremities. In Germany Frederick had declared Lubeck and Ratisbon imperial cities, and thereby had laid the foundation of a new and momentous power of the emperors. The power of the latter was increased, and the state of citizens elevated. The separation of Bavaria from Saxony, which Henry the Lion had possessed together, stood indeed to the power of the emperor, but embittered the animosity between the party of the Guelphs and Ghibelines.

Things were in this state when all Christendom was alarmed by the news of the taking of Jerusalem by the Infidels. That event led to the Third Crusade. On the crown of the crown of the world's kings, Austria joined the crusaders with his son Frederick, and a number of the principal German nobles. Upon mature deliberation it was resolved that the army should go by land through Germany, Hungary, and the Balkan peninsula, and by sea to Rhodes; besides many thousand volunteers, commenced its march in the spring of 1189. Though it met with many difficulties, chiefly from the part of the Greek emperor, who had severely made a convention with Saladin and the sultan of Iconium to obstruct the passage of the Germans, Frederick penetrated into Asia, gained two victories over the Turks near Ioannim, which he took, and was proceeding in his victorious career to Syria, when his eventful life was brought to a close in an attempt to swim on horseback across the river; that was of great importance to the affairs of the empire, by which the power of the latter was increased, and the class of citizens elevated. The separation of Bavaria from Saxony, which Henry the Lion had possessed together, stood indeed to the power of the emperor, but embittered the animosity between the party of the Guelphs and Ghibelines.

Frederick, though not tall, was well made; he had a fine open forehead, and a mild and pleasing expression of the eye and mouth. The heir of all the best qualities of all the members of his distinguished race, enterprising, brave, liberal, with excellent natural talents, full of knowledge; he understood all the languages of the western nations—Italian, German, French, and Arabic; he was austere, passionate, mild, and generous, as the occasion prompted, cheerful, magnificent, and fond of pleasure. And as he was a man of strong passions, of a kind of a poetic mediocrity, and of a most droll kind of humor, he had his favourite avocations, to which he gave himself up with great ardour; and, when the poet of the Troubadours found a home in Germany and Italy, and was honoured and cultivated by emperors and kings, he was also the only great poet of his age. It was a fine open forehead, and a mild and pleasing expression of the eye and mouth. The heir of all the best qualities of all the members of his distinguished race, enterprising, brave, liberal, with excellent natural talents, full of knowledge; he understood all the languages of the western nations—Italian, German, French, and Arabic; he was austere, passionate, mild, and generous, as the occasion prompted, cheerful, magnificent, and fond of pleasure. And as he was a man of strong passions, of a kind of a poetic mediocrity, and of a most droll kind of humor, he had his favourite avocations, to which he gave himself up with great ardour; and, when the poet of the Troubadours found a home in Germany and Italy, and was honoured and cultivated by emperors and kings, he was also the only great poet of his age.
von Wittelsbach; but Otho IV, displeasing the pope, Inocent himself called Frederick to the throne of Germany. In spite of all the efforts of the party of the Guelphs, Frederick imprisoned in Germany in 1169, and was received with open arms by the party of the House of Hohenstaufen. The possession of the crowns of Germany and Sicily inspired Frederick with hopes of making himself master of all Italy, subduing Lombardy, and reducing the power of the spiritual monarchy to insignificance. But he misunderstood the spirit of his age, which was far less enlightened than himself, and still cherished prejudices which he had overcome. If the conception of the plan was great, it was equaled by his prudence in gradually pushing to carry it into effect. In 1179 he caused his eldest son Henry to be chosen king of the Romans, and appeased the anger of the new pope Honorius III. by alleging that this measure was absolutely necessary before he could proceed to the crusade which he had under his advice been prepared for the empire. Disregarding the refusal of the Milanese, to place the iron crown on his head, he proceeded to Rome, was crowned emperor in 1220, and as such hastened to his hereditary dominions which he had left almost as a fugitive. It was there that preparations were to be made for the crusade, but first of all it was necessary to put an end to the internal troubles of the country. By the advice of Herman von Salza, grand master of the Teutonic order, Frederick married Isolde, daughter of John of Brienne, titular king of Jerusalem, with whom he assumed the title of the Teutonic order. Meantime the pope granted him a delay for undertaking the crusade; his chancellor, Peter de Vinci, compiled a new code of laws, the object of which was to settle the authority of church and state, to reconcile the nobility, clergy, citizens, and people, and to add the various nations, Romans, Greeks, Germans, Arabs, Normans, Jews, and French, respecting as much as possible all existing institutions. For the education of his subjects, he founded a university at Munich in 1224; and at Salerno was very flourishing. The solemn letters written by him at his court, and Frederick himself, some of whose juvenile poems in the Sicilian dialect, at that time the most cultivated, have been preserved to our times, may be considered as the first authority of Sicilian poetry. Many eminent artists, Nicola, Massacio, and Tommasi da Sefiani, were patronised by Frederick; and the collections of works of art at Capua and Naples were founded.

The year 1227 being fixed for the crusade, Frederick proposed before he set out to call a general diet of the empire at Cremona, to satisfy himself of the sentiments of the Lombards and be crowned as their king. But the Milanese refused, renewed their ancient league with fifteen cities of the empire, and the community with Germany by occupying the passes of the Alps. For this they were put under the ban of the empire; but Frederick hastening to the crusade, left the management of the affair to the pope, who only proposed a general amnesty, and enjoined the Lombards by promising that he never would enter Sicily with the empire. Disregarding the refusal of the Milanese, to place the iron crown on his head, he proceeded to Rome, was crowned emperor in 1220, and as such hastened to his hereditary dominions which he had left almost as a fugitive. It was there that preparations were to be made for the crusade, but first of all it was necessary to put an end to the internal troubles of the country. By the advice of Herman von Salza, grand master of the Teutonic order, Frederick married Isolde, daughter of John of Brienne, titular king of Jerusalem, with whom he assumed the title of the Teutonic order. Meantime the pope granted him a delay for undertaking the crusade; his chancellor, Peter de Vinci, compiled a new code of laws, the object of which was to settle the authority of church and state, to reconcile the nobility, clergy, citizens, and people, and to add the various nations, Romans, Greeks, Germans, Arabs, Normans, Jews, and French, respecting as much as possible all existing institutions. For the education of his subjects, he founded a university at Munich in 1224; and at Salerno was very flourishing. The solemn letters written by him at his court, and Frederick himself, some of whose juvenile poems in the Sicilian dialect, at that time the most cultivated, have been preserved to our times, may be considered as the first authority of Sicilian poetry. Many eminent artists, Nicola, Massacio, and Tommasi da Sefiani, were patronised by Frederick; and the collections of works of art at Capua and Naples were founded.

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the victory. He renewed the excommunication and summoned a general council to Lyon. Thaddeus of Suzza, the emperor's chancellor, defended his cause but in this councils with overbearing eloquence and
and truth, and refuted the pontiffs, as well as the most
abundant arguments. Frederick, accused of heresy, in vain suffered himself to be examined respecting his faith; how-
ever religious and pure he appeared, he was guilty, because it was resolved he should be, and the popes, unwise in
their great desires and to release all his subjects from their oath, declared him to be deprived of all
honours and dignities, as a perjurer, peace-breaker, robber
of churches, a profane of sanctuaries, and heretic; and he also declared that those who remained faithful to the
elder should be included in the same sentence. But
Frederick showed that he was still emperor: he justified
himself, as became a great sovereign, before the princes of
Europe; and while Innocent was labouring for the election of
the handguns. Raymond of Durazzo had followed him, he fought successfully against the Lombards, defeated a
conspiracy at his court, and did not lose his
courage even when his son Conrad was defeated by his
rival Henry. Conrad in the sequel obtained the victory,
and Henry was at Venice restrained; but he observed the
conduct of Peter de Vineaes, who had long
wavered in his fidelity, and when he found himself dis-
covered, attempted to poison Frederick. This plan being
defeated he was cast into prison, where, in despair, he
lashed his head until the wounds
were lacerated in a camp which he had formed before it, he lost his army, his treasures, and his friend
Thaddeus of Suzza. William of Holland, though only
twenty years of age, was at the instigation of Innocent
elected emperor by the three Rhenish archbishops: Enrico,
his son, was made prisoner by the enraged Bolognese, and
Ezelin joined his enemies. His own health now declined,
and he desired to die in peace; but Innocent rejected the
most reasonable terms of reconciliation. Frederick's spirit
was not broken, but he continued his efforts. It would perhaps have humbled Innocent himself had he not
been surprised by death at Fiorentino, in the arms of his
natural son Manfred, on the 13th of December, 1250, in
the fifty-sixth year of his age, and the forty-first of his
reign.

Frederick III., emperor of Germany, son of Ern-
est, duke of Austria, was born at Innsbruck, on the 21st
September, 1415. He was not yet of age, when, according
to the fashion of those days, he went on an expedition to
the Holy Land. In 1433, in conjunction with his brother
Albert the Prodigal, he assumed the government of his
dominions, the revenues of which did not much exceed
60,000 marks. Being elevated to the throne of Germany,
in 1440, on the death of his cousin Albert II., he appeared
desirous of extending his power over all Europe, and at a
very early age; but he was averse to every thing that took him out of his
own narrow sphere, and was especially deficient in att-
achment to the interests of Germany. It is true there
were many circumstances in the state of Germany, and in his
own situation, which partly excused him. At the very
commencement of his reign he was engaged in war with
his brother Albert, who reigned in Upper Austria, and was
in danger of losing all his hereditary dominions. In dif-
ferent parts of Germany troubles arose, which required a
mixture of military and civil abilities, and he was obliged to
several diets, chiefly to put an end to the schism in the
church, which was not effectual till 1447, when Felix was
persuaded to abdicate, and Nicholas V. was acknowledged
as lawful pope. In 1442 Frederick went to Italy, where he
received the imperial crown from the pope, as well as the
crown of Lombardy, along with his betrothed consort
Eleanora, sister of the king of Portugal. But he did not
thereby acquire a greater degree of moral energy, or an
increase of political independence; nor did he recover any
of the rights of the Empire which had been torn from it by
various usurpers. In 1453 he revived the archducal title
in his family, and busied himself with his botanical pursuits,
and in 1457 he concluded the dangerous side of Turkey became more threat-
ing. He did not make the attempts with which, after the
extermination of the male line of the Visconti, the
usurer Sforza had established himself. How unfortunate
and unstable he was in his external policy appears from his
involvements in Hungary and Bohemia, and the manner in
which, with a view to his son's appointment to large
lands of which the house of Austria had been deprived, he interfered in the
internal disputes of the Swiss Cantons; but not having
a sufficient force of his own, and not being supported by
the Empire, his efforts in foreign troops from France under the
Duc de Nemours, which, he was told, had been
valour at St. Birs Jacob, in 1444, turned their arms in part
against Germany and Austria itself. In Germany he was
threatened with still greater danger. In 1449 he was
entangled in a quarrel, on account of the succession to
the Pahtinate, with Frederick, the victorious, who
received, in 1454, the deceased Louis, who demanded the Electorate for himself
instead of his nephew Philip, and being opposed by Fre-
derick, brought over Mentz, Treves, and a number of Ger-
man cities to his side. To the Bohemian George Podiebrad a prospect of obtaining the imperial
throne, when his ward Ladislaus died, without children,
in 1457, Lower Austria came to Frederick, Upper Austria
and Prague, and part of Carinthia to Siegmund of Tyrol;
but the king of Hungary was driven from his throne. This
death, notwithstanding Frederick's pretensions to Bohemia
and Hungary, he had the mortification to see George Podie-
brad preferred to him in the former, and Matthias Corvi-
in the latter. Scarcely had he recovered from this
embarrassment than in 1459, his brother Albert raised
an insurrection against him in his capital Vienna, and Fre-
derick, being besieged there, was delivered by his opponent
Podiebrad. In this distress he at length, for once, mani-
est resolution, and declared that the palace should be his
stronghold, and that he would defend it to the last
subject. For many years he was engaged in contentions relating to
the duchy of Austria, of the whole of which he obtained posses-
sion by the death of Albert in 1463. In 1468 he again
went to Rome, and had several conferences with Pope
Paul II., as to the means of oppressing his enemies at
the Turks: nothing, however, was done, and he suffered them to
penetrate in 1469 to Carniola, and in 1475 nearly to
Salzburg, almost without opposition. His wavering policy
caused the kings of Bohemia and Hungary to quarrel; but
Frederick forwards both and adjourned the
business of breaking up the empire of his
crevis Csesvina, king of Hungary, laid siege to Vienna in 1479,
and was only prevailed on to retire by Frederick's renounc-
ing all his own pretensions to Hungary, and granting him
the investiture of Bohemia, with a sum of money. It is
improbable that these dispositions could have been
inconveniency of his hereditary dominions by the success of his plan for the
aggrandizement of his family, by the marriage of his
son Maximilian with Maria of Burgundy, the rich heiress
of Charles the Bold, which did not take place till 1477, after
the death of Charles. In 1485 he had a new quarrel with
Matthias, who took from him Vienna and all Lower
Austria. Frederick withdrew to his son Maximilian in
the Netherlands. In 1486 Maximilian was chosen king
of the Romans, but soon afterwards was entangled in a
war with France, and in 1490, his brother Albert the Prodigal
was deprived of the guardianship of his children. In 1498
Maximilian was taken prisoner, and Frederick resolved to
hasten to his assistance. On the death of Matthias in 1499,
Frederick recovered Austria, but was obliged to have
the Hungarian crown to Ladislaus of Bohemia. At length, after
so many defeated plans, he died on the 19th August, 1493,
as some report, from a disorder contracted by a surfeit of
melons; according to others, in consequence of an ampu-
tation of the leg; leaving to his son the realisation of the
defence of his empire, and that of the house of Austria, as
by which he is generally supposed to have meant Austria est
imperare orbis universo. When it is considered that
Frederick died in the 78th year of his age, after a reign of
fifty-eight years in Austria, and fifty-three as Emperor
of Germany, it is surprising how small a share he had in the
important events of that long period, which is rendered
memorable by the taking of Constantinople by the Turks—

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by the revival of learning, in consequence of the influx of fugitives from Greece, and the increased number of universi-
ties in Germany and Italy,—by the invention of printing, by
the visible advance of the states of Western Europe
in learning—an occasion for 200 years' wars, and
by the weakening of the Papal power by the treatise by
the character of Frederick, as
its chief reign evinces, entitled him to his surname of
William. His was cautious, scrupulous about trifles,
avaricious, but temperate, plain in his apparel, chaste and
devout, and remarkably fond of astrology, alchemy, and
botany—possessed, in short, of qualities which might have
made him a respectable private gentleman, but wholly
unsuited to the task of governing an empire. The
state in which he was, divided among 1500 marks,
was in his age.

FREDERICK WILLIAM, elector of Brandenburg, sur-
named the Great Elector, was the son of the elector George
William. In the distracted state of Germany during the
Thirty Years' War, and the necessary absence of his father
with the army, the young prince saw but little of the splen-
dour and indulgences of a court, and passed the first years
of his life in retirement with his tutors, who were men of
learning and experience, and with his mother, first at the
castle of Lützingen, in the forests of the Altmark, and
afterwards at Cstrin. The adventures and the singular
fortunes of his mother's family (who was sister of Frederick,
king of Bohemia, husband of the princess Elizabeth, daughter of
James I of England) were at the crux of the war, in which the
war was carried on, and the dangers to which he and his family were exposed, necessarily made a deep
impression on his mind. In his eleventh year he paid a
visit to his father's sister, Maria Eleonora, queen of Sweden,
conceiving him as the rashness, which dwelt on the exploits of her illustrious husband, whose
mortal remains he contemplated at Wolfogast only two years
afterwards. At the age of fifteen he was sent to the
university of Leyden, where he especially devoted himself to
the study of medicine and philosophy, which he
found so profitable in his after time, as the
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In 1672 however, Holland being threatened by Louis XIV., he concluded a treaty with the republic, engaging to
furnish 20,000 men for its defence. He also contributed to
induce the Emperor, Denmark, Hesse Cassel, and several
German princes to join him against France.

But though his advance into Westphalia induced the French to quit
Holland, the campaign was rendered unsuccessful by the
Austrian successes, and his sudden and unexpected retreat to
Westphalia to the enemy. The Austrians leaving him,
and the Dutch neglecting to send him subsidies, he was obliged to make a convention with France in 1673. The
French were to evacuate Westphalia and pay him 800,000
florins, and to promise not to make war on
Holland, and not to support the enemies of France; yet
he reserved to himself the right of assisting the German
emperor in case of attack. This happened in 1674, when he
invaded Alsace with 16,000 men, and joined the Imperial
army at Neuf-Brisach. He was at first fain to avoid battle, contrary to the advice of Frederick, Turenne
receiving reinforcements, obliged the Germans to quit Alsace.
In order to free themselves from Frederick, the French insti-
tuated the Swedes to invade Pomerania and the March, which
they attacked in December, 1674, with 16,000 men. Fr-
derick hastened to his dominions, and proceeding with great
rapidity and secrecy at the head of only 5000 men, he totally
defeated 11,000 Swedes at Febrhelbin in 1675, and freed his
dominions from the enemy. Following up his successes, he
attacked the Swedes at St. Goar 1676, where he made
a great victory over 30,000 men, and gave them
influenze, and confidence, as well as for his sound understanding. About this time a
society of young persons of both sexes (called Media Nocte)
endeavoured to draw the prince into its circle; but his
friend and tutor, the baron Schellenburg, making him
aware of the immoral nature of the society, the prince
resigned himself to his folly; but the
doctrine, and wisely and temperately, plain in his apparel,
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made him a respectable private gentleman, but wholly
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state in which he was, divided among 1500 marks,
was in his age.

His father dying in 1640, the young prince found his
dominions reduced to a most deplorable condition by war
and bad government. The exactions of Wallenstein in
the Mark alone were estimated at twenty millions of gold
florins; and in a memorial of the magistrate of Prenzlau, it
is stated that the inhabitants are reduced to such dreadful
extremities that they not only eat dogs, cats, and even carr
ry, but to town and country they attack and kill each other for food. He commenced his career
with a degree of prudence and wisdom rarely found in so
young a sovereign. His first care was to correct many
crying abuses, and to restore order in the finances. His
treatment of his subjects was firm and just. In 1643 he
received the investiture of Prussia from the king of Poland; in
1643 he concluded a peace with the Swedes on condition
of their evacuating the greater part of his dominions. At
the peace of Münster he was not able to enforce his claims to
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resolved to commence a war by sea against that power; he fitted out eight frigates which had been employed against Sweden, and sent them in 1680 to capture Spanish ships, and they actually took some rich merchantmen.

But independence of the American colonies was not the only object that Frederick aimed at. The proceedings of this great prince in consolidating the prosperity of his dominions and the welfare of his subjects. He died in April, 1688, leaving to his son a well-cultivated, much enlarged territory, a well-filled treasury, and an army of 30,000 excellent troops. He was twice married; first in 1647 to Louise Henrietta, princess of Orange, a most amiable and accomplished person, author of the celebrated German hymn, 'Jesus mein Zuversicht.' She died in 1667. In the following year Frederick married Dorothea, duchess dowager of Brunswick-Luneberg, who was far superior in all the qualifications of a monarch and a virtuous princess, she was not liked by the people, chiefly because she was on ill terms with her step-children, especially the crown-prince. The character of Frederick, both in public and private life, has always been highly esteemed. He was kind, generous, fond of society, and though rather quick in his temper, extremely placable. As a sovereign, he appears to have justly merited the surname of the Great Elector. Some writers have blamed his frequent changes of party; but it must be recollected that a weak state, surrounded by powerful neighbours, cannot always choose its own line of politics.

FREDERICK I, king of Prussia after 1701, but as elector of Brandenburg. Frederick I., was born in 1657, at Kuningberg, and on the death of his eldest brother became heir apparent to the throne. On the acceding of his father, his education was neglected, and his step-mother even prevailed on the elector, his father, to make a will by which he bequeathed all the acquisitions of territory which he himself had made to be divided among the children of his brother, William. But in 1701, after the death of the reigning ruler, and Frederick succeeded to the whole of his father's dominions in 1688. After the death of his first wife Elizabeth Henrietta, princess of Hesse Cassel, he married, in 1684, Sophia Charlotte, princess of Hanover, sister of George I. to the succession of the Elector. His son, William, cold, simple in his manners, and solid in his views; Frederick impatience, entertaining a high opinion of his own greatness, and punctual in the observance of all points of etiquette. He also assisted the emperor with 6000 men against the Turks, for a sum of 60,000 thalers. From the 14th to the 16th century, the conditions of the treaties of Westphalia and St. Germain, relating to Brandenburg, were confirmed. By negotiations with various powers, or by purchase, he obtained and secured possession to his dominions, and a prospect of others. In 1703 he took possession of the town of Elbing, which had been already mortgaged to the Great Elector for 400,000 thalers, which sum had not been repaid. The grand object of his ambition was to obtain the title of king of Prussia, and being the only part of the empire which he had the absolute dominion. He did not make known his design till the war of the Spanish Succession, when he made it a principal condition of his assisting the emperor, that he should be recognised king of Prussia, to which the emperor consented; but he was not permitted to introduce any new art, and many of the richest manufactories in the Prussian dominions owe their foundation to him. But he had a mortal aversion to all abstract sciences, and even to poetry and literature; and he expelled the celebrated philologists, and forbade the use of foreign tongues.

For this he denounced the scorns of the subsidy due by Austria, and engaged to maintain 10,000 men at his own expense in the war of the Succession; in all the affairs of the empire to vote with Austria; at the election of an emperor; and the Berlin Cadet Establishment, not to withdraw his German states from their obligation to the empire. On the 18th January, 1701, he put the crown on his own head, and also on that of his consort, who was not gratified with this elevation. On this occasion he founded the order of the Black Eagle. Frederick, as the ally of Austria, sent 20,000 men to the Rhine and 6000 to Italy, who distinguished themselves in the battles of Blenheim, Turin, &c. Frederick did not live to see the end of this war, as he died on the 25th of February, 1713, before the conclusion of the peace of Utrecht. Though he was chiefly actuated by personal vanity to assume the royal dignity, his illustrious descendant speaks of this step as having eventually raised the house of Brandenburg to its ancient rank. He was not unknown for his excessive love of external pomp, for the lavish manner in which he rewarded his favourites, and for having purchased the royal dignity on such humiliating conditions. It must be added in his praise, that in compliance with the wishes of his queen, he gave great encouragement to arts and sciences. He founded the University of Halle, and the Academy of Sculpture and Painting at Berlin. He enlarged his capital by adding to it the suburb called Friederichshain, built the palace of Charlottenburg, in honour of his second son, and founded in 1703 the Supreme Court of Appeal. Notwithstanding his failings and weakness, he was naturally of a kind disposition, and merits much praise for having been able, in those critical times, to preserve his dominions from the horrors of war.

FREDERICK WILLIAM I, king of Prussia, son of Frederick I., was born in 1688. At a very early age he manifested a predilection for military exercises; at the age of five years he was sent to Hanover to be brought up with the electoral princes. George I. was a great admirer of him, and made him joint-heir to the government of the Electorate of Hanover. In 1706 he married the princess Sophia Dorothea of Hanover. His character being in many respects directly the reverse of that of his father, he commenced, immediately on his accession to the throne of Prussia, the public economy, and introduced and moderated the government of his kingdom. He laid the foundation of that strict discipline and regularity which are the distinguishing marks of the Prussian army to the utmost extent his ideas of the divine right of kings. Though he repeatedly declared the republican constitution of Holland to be a model for all states, and boasted that he was himself a true republican, he was very far from aiming at reducing his kingdom to the status of a republic. He regulated the public finances and expenditure enabled him to gratify his most ardent wish, of keeping a great military establishment, and he laid the foundation of that strict discipline and regularity which have made the army of Prussia the greatest distinguished. His childish passion for tall soldiers is well known. No expense was spared in order to gratify it; men of gigantic stature were picked up in all the neighbouring states, and many were even kidnapped or forced into his service, by which he involved himself in many serious quarrels. This economy of his internal administration enabled him to repeople those provinces which were depopulated by the plague, by means of colonies from other states, which he settled on very advantageous terms. He was also liberal in rewarding the industry and diligence of his subjects; he introduced any new art, and many of the richest manufactories in the Prussian dominions owe their foundation to him. But he had a mortal aversion to all abstract sciences, and even to poetry and literature; and he expelled the celebrated philologists, and forbade the use of foreign tongues. He erected many public buildings at a considerable expense, but built little, and with great economy, for himself and his court. He founded the Medico-Chirurgical College, the Charité, and the Foundling Hospital at Berlin. The Berlin Cadet Establishment, the Cadet Establishment at Potsdam; the emigrants from Salzburg and the Polish dissidents met with a favourable reception in his dominions. On the other hand the Berlin academy and the universities narrowly escaped dissolution. The details of his private life have been given at great length by his daughter, the Duchess of Baireuth; and his character is portrayed in a few happy touches by Voltaire (Mémoires, &c. écrits par lui-même). The public events of his reign were of no great importance. In the treaty of Utrecht, France and Spain recognised
royal title, and the sovereignty of Naufeldt and Valenig was given him. In the course of the war in the north, in which his father had taken no part, the Russians and Saxons, after the capitulation of the Swedish general, Steenhoek, in Tönningen, resolved to occupy Swedish Pomerania. The king wished to restore tranquillity in the north by a personal expedition; but Count Säckendorf, who had returned from Turkey to Stralsund, rejected his proposals, and required Prussia to give back Stettin, but refused to repay the 400,000 dollars which Frederick had advanced to indemnify the Russians and Saxons for the expenses of the war. This induced Frederick William in 1715 to declare war against Sweden, and to make an alliance with Russia, Saxony, and Denmark. In this war the island of Rügen and Stralsund were taken, but no other event of importance occurred, and after the death of Charles XII. peace was restored. Frederick William, Stettin, and the islands of Usedom and Wolfin, and paying to Sweden 2,000,000 of dollars. Count Säckendorf, the Austrian ambassador, induced the king to withdraw from the alliance which had been concluded at Hanover, between England, Hesse, and Prussia; and, in 1726, to recognize the Pragmatic Sanction, and, if necessary, to support it with 19,000 men. On the breaking out of the war in Poland in 1733, he caused King Augustus II. to be deposed, and, without a contest, received the crown of Poland from the hands of the richer prince, and the youngest of the Silesian dukes. Frederick William had been taken prisoner as a child, and his father in 1740 placed him on the throne. Finding a full treasury and a powerful army, his thirst for military glory, which he himself acknowledges, tempted him to embrace any opportunity that might offer. But there did not appear to be any occasion for great peril. The autumn of the emperor Charles VI., on the 20th October, 1740, led the way to his extraordinary and brilliant career which changed the face of Europe. Frederick took this opportunity of asserting the claims of the House of Brandenburg to four princes, which the Austrian and Russian successors had not been able to obtain; but he only required from the daughter of Maria Theresa, the daughter and heiress of Charles VI., the duchy of Glogau and Sagan, promising on his side to support her against all her enemies, to retire at her death and that of her son, the king and crown prince, to pay her 2,000,000 dollars. His proposals being rejected, he took possession of Lower Silesia in December, 1740, and defeated the Austrian army at Möllwitz, on the 27th April, 1741.

This army, which nearly decided the fate of Silesia, raised up more enemies to Austria. France and Bavaria united with Prussia, and the war of the Austrian succession began. George II. king of England, the only ally of Maria Theresa, advised her to make peace with Prussia, because Frederick had not only recovered most of the territory which he had lost and had obtained a victory at Cazalou on the 17th of May, 1742, over Prince Charles of Lorraine, peace was concluded at Berlino on the 28th of July, and the first Silesian war was ended. Frederick obtained the possession of Upper and Lower Silesia, and the county of Glatz, with the exception of Tropau, Jügendorf, and Teschen. On his side, he renounced all claims to the other Austrian dominions, took upon himself a debt of 1,700,000 dollars, with which he immediately discharged his troops, and promised to respect the rights of the Roman Catholic subjects in Silesia, in the event of his peace, and it was guaranteed by France and England. Frederick immediately profited by it, to organize his new conquests, and to render his army more formidable. On the 10th of August, 1743, he unexpectedly entered Bohemia, and took Prague; but being pressed by the Austrians, under Prince Charles of Lorraine, and the Saxons, their allies, he was obliged to leave Bohemia, and retaken, under the command of the emperor Charles VII. on the 15th of January, 1745, the defeat of the Austrians at Pfeffenhöfen, induced his son the young elector, Maximilian Joseph of Bavaria, to make peace at Fusson, with Maria Theresa, and the Frankfurt union was dissolved; these events left Prussia itself neutral. On the other hand, England, Austria, the Netherlands, and Saxony, had concluded a strict alliance at Warsaw on the 8th of January, 1745, and Saxony had joined entered into a special convention with Austria against Prussia, on the 15th of May, 1745. But Frederic defeat the Saxons on the 4th of June, at Hohenfriedburg in Silesia; then entered Bohemia, and gained
another victory after a very obstinate combat at Sorr, on the 30th of September, 1745. The victory of the Prussians under Prince Leopold of Dessau, over the Saxons at Kesselsdorf, on the 15th of December, led to the treaty of Dresden; at that time they were under the influence of the treaty of Berlin; so that Frederic retained Silesia, acknowledged the husband of Maria Theresa, Francis L., emperor, and Saxony engaged to pay to Prussia one million of dollars. Thus ended the second Silesian war.

During the eleventh year that followed, Frederic devoted himself with unremitting activity to the internal administration of his dominions, the organization of the army, and to literary pursuits. Among the grand improvements which he contemplated was a reform in the judicial proceedings, with a view to make them more simple and uniform, in all the different provinces of his dominions. Together with his chancellor Ceccoii, he compiled the ‘Frederic Code,’ a body of laws for the dominions of the king of Prussia, founded on reason and the Constitution of the crown. It is not easy to understand what is here meant by the word ‘Constitution.’ His father, it is true, drew up with great care what he called a constitution (Verfassungs-Urkunde), or instructions for the supreme general board of finance, war, and domains, which he issued in 1722. This was the document that had been the father’s, and the king assembled in 168 pages, published in 160 pages, by Dr. Förster, in his ‘Life of Frederic William I.’ but it is not likely that this is here alluded to. Frederic also wrote ‘Memoirs of the House of Braudenburg,’ a concise account of his house, written in a good sacred style and expressed in terms which, though they may seem to merit; though the writer may have been at times betrayed by prejudices into unintentional misrepresentations of incidental facts. Another work, a didactic poem in six books, on the Art of War, is his most considerate, and the archivist, his most excellent, peace, and all his other works are in French. These recreations did not divert his attention from those paramount duties which he always performed with the most persevering care. Instead of indulging in the pleasures of the chase, he made judicious and important contributions. He would, in his desire to make agriculture, manufactures, and the arts flourish; and encouraged commerce, the true principles of which however he appears not to have understood. Though possessing no naval force, he insisted on the right of free navigation for his subjects, without molestation from the fleets of contending parties. One grand object was to improve his revenues, a measure necessary for the maintenance of his army, which he had increased to 165,000. He expended large sums in gratifying his taste for the arts, by decorating the city of Dresden with splendid edifices in those two places, in which, however, there was this incongruity, that the richest architectural decorations were often loused on the exterior of buildings which were only barracks for the troops.

When the emperor had expelledolland and France in 1755, the former concluded a treaty with the king, the chief object of which was to secure Hanover from invasion. This led to a secret alliance between France, Austria, Saxony, and Russia, of which Frederic, having been privy informed, chiefly through the intercession of a clerk in the Saxony chancery, became apprehensive of an attack, and of the loss of Silesia. He accordingly resolved to anticipate his enemies, and commenced operations by invading Saxony on the 24th of August, 1756; which was the beginning of the thirteenth year of the ‘Seven Years’ War.’ This contest was the most extraordinary and important in modern times, previous to those of the French Revolution. Though Frederic is the hero, the history of the war is, in fact, the history of oppositions, in which Frederic and the Austrians, tending to invade Bohemia, required a passage through Saxony, which the elector king of Poland anticipating, assembled his troops in an intrenched camp at Pirna. Frederic invested it, and having defeated, at Löwowitz, the Aus- trians, he sent to and rescued his army, and compelled all the French and Austrian soldiers in his own army. In 1757, he advanced into Bohemia, gained, on the 5th of May, a great victory at Prague, over the Austrians, under Prince Charles of Lorraine and Marshal Brown. The Austrians took shelter in Prague, and immediately invested, but the approach of the Austrians, under Marshal Daun, changed the face of the campaign. Daun formed an intrenched camp at Kolin, which Frederic attacked, but was defeated with great loss, on which he raised the siege of Prague, and retreated into Saxony. In the mean time the French compelled the Duke of Cumberland to abandon Hanover, of which they took possession; and about the same time the Prince of Brunswick, to co-operate with the Prussians on the north: but though Frederic’s affairs were supposed by his enemies to be desperate, he was not dismayed. He first attacked the United French and Austrian army, twice as numerous as his own, at Rossbach, and gave them a total and most disgraceful defeat. He then marched into Silesia, where the Austrians had taken Breslaw, gained a great victory over them at Lissa, and recovered Breslaw. The Russians and Swedes had retreated from the Prussian territories, and the Hanoverians had assembled a large force under Prince Ferdinand of Brunswick, to co-operate with the Prussians. Thus at the close of 1757 the king’s affairs were so far restored, that he might have hoped for success in the next campaign, if he could have kept back the Russians; but the eminence of the empress Elizabeth was inveterate. However, the admiration which Frederic’s conduct had excited in England, and confidence in his ability, induced the English government to grant him a subsidy of 670,000l., which became an annual grant. In the campaign of 1758 the principal event was the sanguinary battle at Zorndorf, where, after a desperate struggle, 21,000 of the French were defeated, but the loss on both sides was immense. In 1759 the king’s first object was to stop the progress of the Russians, who advanced to Frankfort on the Oder. On the 12th of August was fought the battle of Kunnersdorf. The king began the battle, made by him so sure of the victory, that he despatched a letter to that effect to the queen at Berlin; but in the end, he was obliged to quit the field, and wrote a second letter to the queen, desiring her to send away the royal family, and to promise her that in case of a defeat the army would be concluded terms with the enemy. But Berlin was saved. Frederic’s skilful conduct after his defeat induced the Russian general, instead of entering Brandenburg, to join the Austrians in Lusatia; but soon afterwards, General Fincek, with 15,000 men, advancing on the Elbe, to attack the Prussians, was cut off by the Austrians and Swedes, who shared the same fate. Frederic, however, received reinforcements, and Marshal Daun was contented to occupy the camp at Pirna and cover Dresden. In the following spring some fruitless negotiations for peace took place. In this campaign the city of Dresden was plundered by a body of marauders from a bombardment, by which Frederic destroyed the finest part of the city. On the other hand, the Russians and Austrians entered Berlin, which was saved from plunder by a composition, but had to pay heavy contributions. Berlin had been soon evacuated by them. It was taken in 1758, by the Swedes, and occupied by them for three years, which, though they were only barracks for the troops.

At the commencement of 1761 it was evident that the king of Prussia’s situation was critical. He confessed himself, that after the great losses he had sustained, his army was not equal to what it had formerly been. He accordingly occupied a strong camp in Silesia, where he remained immovable, watching his enemies, but was unable to prevent Matzows being taken, Henry Forster, and the Russians, Colberg. Frederic’s situation was so desperate, that he appears to have seriously contemplated suicide; in this critical state, the only event which perhaps could have saved him, occurred. This was the death of his brother, Prince Henry, the heir apparent, on the 4th of December. The king and his brother, Prince Henry, gained several advantages in 1762 and 1763, and peace having been concluded between Great Britain and France, Austria was left alone, and the empress queen obliged to conclude peace with Frederic, who guaranteed the whole of each other’s German dominions, Frederic only promising to give his vote to Joseph as king of the Romans. The king of Poland was restored to his
dominions without compensation. Thus ended the Seven Years' War, which, after immense sacrifices of human life and treasure, left the political balance of Europe unchanged.

The issue of this great conflict, in which the genius of Frederick had been so extensively distinguished, secured to him a decisive influence in the affairs, not only of Germany, but of all Europe. Returning to his capital after an absence of more than six years, he seriously directed his attention to the repair of the evils inflicted on his dominions by the war. He opened his magazines to give his subjects corn, both for food and for seed. He distributed horses among the farmers, rebuilt at his own expense the houses which had been burnt, founded colonies, erected manufactories, and made canals for the convenience of inland trade. Silesia, which had been the prey of all taxes for thirteen years, and the New Mark and Pomerania for two years. To relieve the nobility in those three provinces, a system of credit was introduced, by which the value of estates was raised, and the rate of interest reduced. In 1764 he founded the bank of Berlin, to which he gave eight millions of dollars as its first fund. Though he really desired to promote trade, he appears to have been unequipped with the true principles of commerce; and this, united with his desire to increase the revenue, induced him to take measures which were unjust: for instance, the debasement of the current coin. Meanwhile he continued to maintain a very large army. In March, 1764, he concluded an alliance with Russia, by which he supported the election of the new king of Poland, Stanislaus, and the candidacy of the opposite candidates. In Poland. In 1772 he agreed to the first partition of Poland, by which he obtained all Polish Prussia (which was ceded in 1766 by the Teutonic Order to Poland) and a part of Great Poland, as far as to the river Neta, but with the exception of Silesia. The king and Theresia were accused of having first suggested the partition of Poland; but the fact is, that Frederick I. had formed a plan for the partition of Poland, drawn up in the year 1760. From that time the kingdom of Prussia was divided into East and West Prussia, and the share of the eleventh division of Bavaria, without children, he interfered to prevent Austria from partitioning that country. The war was, however, terminated without a battle, by the treaty of Trecben, in May, 1759, by which Austria renounced its intentions, and consented to the union of the Prussian principalities with Prussia. In 1783, the emperor having formed a plan to obtain Bavaria in exchange for the Low Countries, Frederick defeated it in conjunction with Saxony and Hanover, by conciliating the alliance between the German princes, called the anti-French league, which has been considered as the master piece of his policy. In 1786 he concluded a treaty of amity and commerce with the United States of America. Though he had long suffered from gout and asthma, which terminated in confirmed dropsy, not a little aggravated by his many visits to the bath of St. Omer, he continued his unrivalled attention to public affairs till within two days of his death, the approach of which he contemplated with composure: he died on the 17th of August, 1786, at his favourite palace of Sans Souci, in the 75th year of his age, and the 11th of his reign, leaving to his nephew, Frederic William II., a kingdom enlarged, from 2,190 to 2,515 German square miles; above 70 millions of dollars (10 millions sterling) in the treasury; and an army of 244,600 men.

The character of Frederic II. and his public and private life, have furnished the subject for numerous publications in all the European languages, which are perfectly familiar to most classes of readers. One of his great merits was, that he did not contract any public debt, and though he raised a very large revenue, yet a considerable part returned into the pockets of his subjects, through various channels. Among his defects may be reckoned his contempt for religious institutions, which was considered by his contemporaries a want of respect for religion itself. He was avowedly an unconverted sceptic, and his notions respecting the nature of religion appear to have been vague and fluctuating. With respect to his temper, he seems to have been deficient in real sensibility, and though many examples of his economy and placability are recorded, he was at times irascible and even cruel. His moral conduct was guided generally by his pleasure and his interest, and that, as well as his religion, were greatly influenced by his propensities for French literature, and especially his admiration of Voltaire. Proud as the Germans are of Frederic, they cannot help regretting his neglect of German literature, to the improvement of which he would have done more harm than good. His voluminous works, all in French, were entitled to distinction in the literary world, even if they had not been a king. Besides the works already noticed, he published military instructions, and some philosophical essays in four volumes. His humorous works, in 15 volumes, contain the history of his own times, the history of the Seven Years' War, and memoirs, from the Treaty of Hubertusburg, 1763, to the end of the partition of Poland.

FREDERIC WILLIAM II., king of Prussia, was born in 1744. His father was Augustus William, second and last of the Hanover, on whose death in 1730, his son, Frederic the Great, declared him Crown Prince of Prussia. The young prince soon indulged in a mode of life which was highly amusing and displeasing to his parents. He was in constant fear of being snared from each other for many years. Frederic II. however, pressed his satisfaction to the crown prince, on his great proofs of personal bravery in the war of the Bavarian Succession, 1779. Frederic William's first wife was Elisabeth Christina, sister of King Frederick II., and married in 1769, and afterwards married the Prince Louis of Hesse Darmstadt. His accession in 1786 under favourable circumstances, Prussia was engaged in a conflict with foreign enemies, and the policy of Frederic II. had made him, in the eyes of the world, an arbiter of the affairs of Europe. Poland, after so long a period of dismemberment, was to be restored. Frederick's errors soon lessened his credit with foreign powers, and the treasury left by his uncle was wasted in useless wars. Frederick, by the extravagance of his favourites, his diletta, and his military affairs was reduced to a state of war, under Duke Charles William Ferdinand of Brunswick, to Holland, where the patriots refused to recognize the right of the stateholder, and insulted his wife, Frederic William's sister, on her way to the Hague, for which he was not satisfied had been given. The Prussians were opposed to Amsterdam, and the old enemy of things was restored, upon which a defensive alliance between England, Prussia, and Holland was concluded at the Hague in April, 1788. In the war between Sweden and Russia, the same year, her union with England, prevented any further attacks of Sweden by Denmark. Being jealous of the secrets of Russia and Austria in the Turkish war, he concluded an alliance with the Pope in 1790, and guaranteed its powers. This measure having given offence to the Turks, a Prussian army was assembled in Silesia, on the Baltic frontier, and an Austrian army in Bolotina. The Emperor Leopold II. did not wish for war with Prussia, and in the conclusion concluded at Reichenbach on the 29th July, 1790, between Austria and Prussia, the latter agreed to make no attacks on the two countries at the same time, 1792, when the former entered into a closer union with respect to the affairs of France.

A part of the Polish nation, with King Stanislaus Poniatowski, fomented a plan to establish a new constitution for the kingdom, and to make the royal dignity hereditary to the house of Saxe-Coburg. In order to secure foreign aid, assistance was concluded between Poland and Prussia, by which the latter recognized the integrity of Poland, and agreed to furnish 10,000 infantry and 2000 horse, the foreign power should interfere in its internal affairs. After making peace with the Porte, Catherine II. wished to make the Prussian-Hungarian union permanent, and therefore, in order to reduce Frederic William to the alternative state,
of defending Poland against Russia by virtue of his alliance with that state, or of making a second partition of it, in conjunction with Russia. Frederic William chose the latter, and in January, 1793, sent troops, under General Mül-
lerdorff, into Great Poland. He occupied a tract of coun-
try of the extent of 1100 German square miles, with a popu-
lation, including Danzig and Thorn, of 1,200,000 inhabi-
tants. Though the diet at Crodno was obliged to agree to this accession, as well as to a similar cession of territory to Prussia, the Prince rose in 1794, and Kosciusko and M. Calinsky, to recover their independence, in which insurrec-
tion the Russians and Prussians were several times de-
teated, till Kosciusko was taken prisoner on the 10th Octo-
ber, by the Russian General Fersen, and Praga was stormed by Napoleon. By the treaty of 1796, which accorded this 
portion of Poland followed. All that remained, after the 
preceding partitions, was divided between Austria, Russia, 
and Prussia, by which the latter acquired a large addition 
of territory, and the independence of Poland was annih-
ilated. In the war against Turkey, and against the Ar-
menians, he made a treaty of alliance with the Moslem 
chiefs, upon the terms of which Sweden found herself able to 
conquer her to the Rhine in 1792, under the duke of Brunswick, and 
the king soon followed, accompanied by the princes. 
The duke of Brunswick failed in his plan of marching to Paris, 
and was obliged to retreat. On the 5th April, 1796, Prussia 
made peace with the Republic, by which accorded the to the Rhine in the possession of the French. To 
preserve the neutrality of the north of Germany, a conven-
tion was made between Prussia and several princes, whose terri-
tories were included in what was called the line of dema-
tion. During his reign, Prussia was attacked by Austria, and Bri-
an, who was the last prince of that line of the house of 
Brandenburg, ceded those principalities, for an annuity of 
500,000 florins, to Frederic William, who on that occasion 
revived the Order of the Red Eagle. In the internal ad-
ministration, the Frederic of indices to taxes, introduced 
by Frederic II. was abolished. Many judicial arrange-
ments were introduced, and a new code of laws for the whole 
kingdom published; but the toleration promised by Fre-
deric II. was much less obvious. He permitted the Jews and 
other persons who made a profession of the faith, of the 
king, by means of the religious edict of 1788, and other mea-
ures. Frederic William died on the 16th of 
November, 1797, and was succeeded by his eldest son, the 
present King Frederic William III., whose eventful reign 
opened his dynasty, which has achieved the highest 
success at least equal to those experienced by his great pre-
decessor.

FREDERIC AUGUSTUS I. of Poland. [Augustus 
II., p. 90.]

FREDERIC AUGUSTUS II. of Poland. [Augustus 
III., p. 98.]

FREDERIC AUGUSTUS I., king of Saxony, eldest 
son of the Elector Frederic Christian, born at Dresden 
the 23rd of December, 1756, succeeded his father 17th 
of June, 1772, in the government of the state which he was 
Prince Xavier, till he assumed the government in 1768. 
In 1779 he married the Princess Amalia of Deuxponts. 
He began his reign with a firm resolution, to which he re-
mained faithful under all circumstances and at all times, 
to the utter destruction of all compromises, and to 
such a point as to prosecute his reform of the customs 
itself. By the constitution of his country, the 
the state was divided into 16 orders, the 
principal of which was that of the nobility, which was 
organised. By Napoleon's treaty of 1806, he was obliged to 
join with France in the war. He was bound to take part with France 
in its wars, but sent no troops to Spain; and in the war 
with Austria in 1809 he furnished only his contingent. In 
1813 his dominions became the theatre of war. On the 
9th of November, 1813, Napoleon was defeated at 
Weissenfels, and thence to Prague; but the mea-
sures of Napoleon compelled him to return to Dresden; he 
then toured the allies after the defeat of the army of 
Orthes, and at the battle of Jena, and at the battle of 
Frederic in the line of demarcation, on his southern frontier. 
He took no part in the new war between Austria and France in 1809; but 
when the Congress of Vienna met, he was in very 
poor health. On the 20th of August, 1806, he was 
ordered home, and was obliged to time of the 
accession of Louis to the throne of France. Napoleon, besides 
various requisitions, levied a contribution of 25 millions of 
francs, which he imposed upon his subjects, and with 
their sequestered revenues, but allowed the country to remain 
neutral; and its fate whether Napoleon had been very dif-
ferent but for the respect with which the private and public 
virtues of the king inspired even his enemies. Frederic 
was the first to consider himself for the succession to the 
throne, and with great solicitude to his last days. 
Frederic IV., king of Sweden, was 
decided a treaty of peace with Napoleon at Bonn, in 
December, 1806, assumed the title of king, joined the 
Rhenish Confederation, and furnished 20,000 men as his 
contingent. By the treaty of Tilsit in 1807 he obtained a 
part of the Duchy of Warsaw. He was bound to take part with France 
in its wars, but sent no troops to Spain; and in the war 
with Austria in 1809 he furnished only his contingent. In 
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P. C. No. 585.
his brother, Sophia Dorothea, daughter of the margrave of Brandenburg-Schwedt, a highly cultivated and excellent lady. After the death of 1733 his father was left with the leisure to attend to the education of his son, who possessed extraordinary natural abilities. He was however brought up in many respects on the French model, to which his four years' residence at Lausanne contributed. He spoke and wrote French, and before he was nine years of age he was able to compose and recite verses, but he esteemed the literature of his own country, and spoke and wrote German in the same perfection as French. His natural eloquence was aided by an extraordinary memory; he was well versed in mathematics, natural philosophy, history, geography, and cultivated his taste for the fine arts, especially in his journey to Italy in 1782; but with too much vivacity for calm examination, he often hastily adopted a false view, and was thus led in his subsequent life into many errors. In many points he took Frederic the Great for his model. As well as his seven brothers he entered the Prussian service, and in the war of the Bavarian succession attained the rank of major-general. After his return from Italy, whither he accompanied his sister and her husband the Grand Duke Paul of Württemberg, he was made lieutenant-general, and governor-general of Russian Finland. He renounced the connexion in 1787, and lived first at Monrepos, near Lausanne, and then at Bodenheim, near Mont. He witnessed at Versailles the first sittings of the National Assembly. When his father, after the death of his three male descendants, became duke of Württemberg, in 1795, Frederic, as crown prince, opposed in 1796 the entrance of the French into France, and was defeated. After this event he lived for a time at Anspach, then at Vienna and London, 1798. He married in 1797, Charlotte Auguste Matilda, princess royal of England, with whom he returned to Stuttgart in June the same year.

When he succeeded to the government, in December, 1795, his duchy, which had already suffered severely in the war with France, was almost depopulated, and the German provinces of 53 square miles in extent, with 600,000 inhabitants. In 1799–1801 the sufferings of the country were still greater. Frederic however, by his interest at the courts of Vienna and Paris, was able to secure the decree of 23 February, 1803, besides the indemnity for Frank dam or an ample indemnity for his loss of territory on the left bank of the Rhine. The chief object of his policy was to preserve and extend his dominions. On the 2nd of October, 1805, Napoleon crossed the Rhine, and on the following day issued the declaration of war on Prussia. Frederic was compelled to join France, and furnished 8000 men. By steady adhering to the system of Napoleon he acquired in and after the peace of Pressburg the possession of the kingdom of Bavaria of 360 (nearly 7400) square miles, with 1,400,000 inhabitants. At the era of Napoleon the king of France in 1806, he published the organization of his greatly-enlarged dominions, by which one uniform system of administration was maintained throughout his dominions. Desirable as this might be (and he is highly commended for it by some writers), it certainly did not give satisfaction to all his subjects. Accustomed, and indeed compelled, to act with energy in his foreign affairs, he sought to make every thing in his government bend to his will, without regard to long-cherished prejudices or even to the most established rights. He of necessity joined the Rhénish Confederation, was at the meeting of Napoleon and Alexander and the greatest princes of Germany at Erfurt in October, 1806, and in the campaign of 1812 furnished his consent as member of the confederation. After the battle of Leipzig he formally renounced, in November, 1813, the Rhénish Confederation, and joined the allied powers against France. He went in person to the congress at Vienna, where he was received with the most distinguished honors by all assembled in the various courts.

The thirteenth article of the act of congress it was enacted that representative assemblies should be introduced into all the states of Germany—a benefit for which Germany is in great measure indebted to the prince regent of Württemberg; (though he did not accede to the German Confederation till the 1st of September, 1815) drew up a constitution, which he presented as an ordinance to the states which he had convoked; but it was unanimously rejected: the deputies required the antient constitution, and speedy relief for the miseries of the people. Accustomed to implicit obedience, and not a little astonished at this behaviour, he still redressed many severe grievances, and until the year 1818 he celebrated the anniversary of the reign which he called another in October, and unexpectedly prescribed fourteen propositions as the basis of a constitution, which were very favourably received by the people. A new constitution was drawn up; but before it could be discussed he died, on the 7th of September, 1818, at the age of 87, and after the nineteenth of his reign. His character was essentially despotie, but he had too much good sense and too enlightened an understanding to be systematically a tyrant. He desired the good of his people, of the means of promoting which he so fondly cherished himself to be the best judge. It must be said to his praise that his edict of the 15th of October, 1806, secured to all his Christian subjects equal security for their rights and the free exercise of their religious worship. He introduced neither French laws nor French forms of administration; everything in Württemberg remained German; and Württemberg was happily preserved from the degradation of becoming a French province.

FREDERICK WILLIAM, Duke of Brunswick, the fourth and youngest son of Charles William Ferdinand, was born October 2, 1731, and educated for the military profession. In 1786 the king of Prussia named successor of his uncle Frederic Augustus duke of Oels and Bernstadt, who died in 1803. He went to Lausanne, spent two years in Switzerland, and on his return was made captain in a Prussian grenadier regiment, and served in the Austrian army in France, and was twice wounded. After the peace of Basle he obtained a regiment, and in 1804 married the princess Mary of Baden, by whom he had two sons, Charles and William. After 1806 he took part in the war against France, and in 1807 he was taken prisoner at Jena, and his father's unhappy fate inspired him. He was taken prisoner with Büchter at Lübeck. His eldest brother the hereditary duke dying without children in September, 1806, and his two other unmaried brothers having been declared incapable of reigning, he was pronounced on the 17th of September, 1809, to have succeeded to the government of Brunswick on the death of his father; but the peace of Tilsit and the will of Napoleon decided otherwise. From that time he lived at Brechsal, where he lost his consort in April, 1808. At the beginning of the war against Austria, he was made a general of cavalry, and in 1809 he reached Brunswick on the 31st of July, but did not enter the city. There was no time for rest; three bodies of troops, each much more numerous than his own, were advancing against him. On the 1st of August the Westphalian general Reubel's division of 6000 men, who had reached Brunswick, a battle ensued, in which Reubel's 4000 men not only yielded to the 1500 Brunswickers, but left the only way open by which they could escape. By a series of skilful manoeuvres the duke deceived pursuers, crossed the Weser, broke down the bridge behind him, and completely baffled his enemies, reached Eselsflieth on the 6th of August, where he took possession of a sufficient number of vessels in which he embarked his troops during the night, and on the 7th in the morning, hoisting English colours, all his troops, 7000 strong, and the island of the 7th proceeded with his corps to England. He was received in England with the greatest joy; his troops were taken into the English service and employed in the Peninsula, where they distinguished themselves. The duke had a pension of 6000, a year granted by the parliament till he returned to his own dominions in December, 1813, where he was received with extraordinary enthusiasm, and with expectations which he was unhappily unable to fulfil. He was one of the most liberal and noble-minded princes of his age. He was sincerely desirous of the welfare of his subjects; but, wanting to accomplish it at once, he overlooked the ordinary forms: finding nothing to support him in the constitution of the country, which had been completely changed, and being surrounded by interested or prejudiced persons, numerous in number, his military establishment was too great for the dilapidated state of the finances, and indifference, if not aversion, took the place of the affection of his people. The rest is known. With his famous Black Hussars he joined the duke of Wel-
lantogen in 1815, and fell gloriously at Quatre-Bras on the 16th of June, 1815.

FREDERICK I., king of Denmark, son of Christian I.,
was born 1473. His father had made him duke of Sleswick,
Holstein, Stormar, and Dithmarsch, but his elder brother,
King John, stripped him of half his dominions. During
these impositions the young prince was too young to
have been greatly hurt, but when he was older, he
secured his dominions by marriage. In 1523, he was declared
king in his stead. He was encouraged
to lay claim to the crown of Sweden, but prudently made
a treaty of friendship with that kingdom, where Gustavus
Vasa was too firmly established to be displaced without
a severe struggle. Frederick however succeeded in annexing
the isle of Gotland to his dominions. In 1527 Frederick
embraced the Lutheran religion, and established it in his
dominions. He died in 1533, at the age of sixty, and
is highly venerated in the history of his country for the
justice and moderation of his government.

FREDERICK II., king of Denmark, was born in 1534,
and succeeded to the crown on the death of his father,
Christian III., in 1558. Soon after his accession he
married the Countess Dorothea of Mecklenburg,
and the union was rendered more confidential
by the marriage of his eldest daughter with the heir
of the German emperor, and the union was
confirmed by a treaty. The whole
power of the emperor was devoted
behalf of the interests of the
king's family, who accepted the
title of Holy Roman Emperors.
FREDERICA.

FREDERICK IB., king of Denmark, born in 1671,
and succeeded his father, Christian V., in 1699, and
immediately attacked the dominions of the Duke of Holstein.
He laid siege to Tonning in person, but was soon obliged
to retreat, and his son Frederick V. was declared
brother-in-law to the Duke of Holstein, whose first
military exploit was this invasion of Zealand.
Frederick was obliged to conclude peace, engaging to indemnify
the Duke of Holstein for all the loss he had caused him, and
fully to recognize his title to the sovereignty of his domi-
nions. When Charles was afterwards a fugitive in Turkey,
Frederick joined the league against him, but his troops
were totally defeated in Schonen. He then invaded Swedish
Pomerania, in which he met with little success; and though
he afterwards made himself master of the duchy of Sleswick,
his army, united with that of Saxony, was defeated by the
Swedes under general Steenbock, who destroyed the town
of Altona. In 1714 and 1718 the Danes were more fortunate,
and drove the Swedes from Norway. Peace was con-
cluded in 1720, and the trade of Christiansholm was
confirmed.

The most remarkable and important event in the reign of
Frederick III. was the change of the constitution, which
had been limited, and in some degree elective, into an her-
diary and absolute monarchy. This change was owing to
the arrogance and selfishness of the nobles, who treated the
commoners as their vassals, and refused to hear any part
of the public burdens. The commons therefore, in con-
junction with the clergy, resolved to surrender the liberties of
the nation and ask the consent of the king, who readily
accepted the offer, and the nobles, having surrendered
their position, the power was vested in the crown.
The rights and privi-

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the quantity and duration of the widow's interest are regulated by the various customs: it is generally a third for her life, but in other cases it is a fourth part, and sometimes only a portion of the tent. By other customs she takes the whole for her life, and in the manor of Taunton Deane, in Somersetshire, the wife takes the inheritance. In some instances the widow had only a right to Free Bench out of the lands of which her husband died seised; in others, her right attaches upon all the lands held of the manor of which he was seised during the coverture. Frequently her estate is during widowhood only, and sometimes during chaste widowhood. In the manors of East Bergholt, West Endleigh, Berkshire, and Torre in Devonshire, and in some other parts of the West of England, there is the ludicrous custom that where a widow has forfeited her Free Bench for incontinence, if she will come into court riding backwards on a black horse in her habit, the heralds in her tent will repeating verses more significant than decent, ending with 'Therefore pray, Mr. Steward, let me have my land again,' the steward is bound to re-admit her to her Free Bench. (Cooke's Inheritance: Serum on Copyhold.)

FREE SCHOOL. (School.)

FREE WILL. (Will.)

FREEJEMAN. (Slave.)

FREEHOLD. An estate of freehold is defined by Bristot to be the possession of the soil by a freeman and by Sir William Blackstone to be such a possession of lands as is conveyed by livery of seisin, or in tenements of an incorporeal nature by what is equivalent thereto. Neither of these definitions is sufficiently precise; both are the consequence of the tenure not the tenure itself. In freehold tenure, whether by seisin or by seisin in tail, was simply an estate for life in tail or fee, held by a freeman independently of the will and caprice of the feudal lord, and the term was used in contradistinction to the interest of terms for years, and lands in villegagnon or copyhold (copyhold), which might be determined by the lord at pleasure. The older law writers distinguished freeholds as of two kinds, in deed and in law; the first being the actual possession of lands for an estate of freehold; and the other, the right to such lands before actual possession taken. Sir William Blackstone distinguished freehold estates into inheritable, and freehold estates not of inheritance. (Estate.) Neither of these divisions is of any real importance. The true definition of a freehold is, an estate in lands or tenements in fee simple, in tail, for the term of the life of the holder, or for the life of another person, in dower or by the curtesy. (Curtesy; Dower; Estate.) Some offices also, held for life or fee, are of freehold tenure. (2 Bl. Comm.: Co. Litt.)

FREESTONE. (Sandstone.)

FREZING is the solidification of fluid bodies by the abstraction of the heat necessary to their fluid form. It occurs by the effect of natural cold in many liquids; and most of them may be frozen by an artificial reduction of temperature. It is to be observed that what are termed the freezing points vary in different fluids, and their remaining such at different temperatures depends upon the degrees of power with which they retain the heat necessary to fluidity. Liquids may be considered as solids in combination with heat, which exists in them as latent heat, and which they give out as sensible heat when they return to the solid form.

Freezing mixtures are such as produce cold by and during the liquefaction of their solid ingredient, and the consequent absorption of the heat on which its solid form depended; and which, by lowering the temperature of substances immersed in them, procure the substance of which they contain, free and cold, in any degree, which may be wished, by adjusting the proportion of the ingredients of the mixture, which contain water and certain bodies, which both liquidify and solidify the mixture, and give it the requisite degree of cold.

Mr. Walker, of Oxford, published in the 'Philosophical Transactions' for 1801 an account of various frigorous mixtures for producing intense cold. The following table contains the results which he obtained by using the different proportions of snow and different salts and acids:—
temperature of the bodies above tallow is usually called their freezing or congeeing point; and of tallow and the bodies below it, the fusius or melting point. These are added the fusius points of some metals, as determined by Professor Daniell, by means of his register pyrometer (Phil. Trans. 1830.):

- Sulphuric acid
- Liquid ammonia
- Nitric acid
- Sulphuric acid
- Mercury
- Nitric acid
- Sulphuric acid
- Common salt
- Ditto
- Ditto
- Brandy
- Sulphuric acid
- Pure hydrocyanic acid
- Common salt
- Ditto
- Sal ammoniac
- Common salt
- Ditto
- Oil of turpentine
- Strong wines
- Rochelle salt
- Common salt
- Ditto
- Blood
- Common salt
- Epson salt
- Nitric acid
- Common salt
- Copperas
- Vinegar
- Sulphate of zine
- Milk
- Water
- Olive oil
- Sulphur and Phosphorus, equal parts
- Sulphuric acid
- Ditto
- Ditto
- Concentrated acetic acid
- Tallow (Dr. Thomson)
- Phosphorus
- Stearic, from hog's lard
- Spermaceti
- Tallow (Nicholson)
- Margaric acid
- Potassium
- Yellow wax
- White wax
- Sodium
- Sulphur (Dr. Thomson)
- Sulphur (Dr. Hope)
- Tallow (Crichton)
- Cadmium (Stromeyer)
- Bismuth (Crichton)
- Lead (Crichton)
- Zinc (Crichton)
- Anilolin
- Silver
- Copper
- Gold
- Iron, cast

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whch a Roman Catholic church was added in 1831; and of these the High-church (once a cathedral) is a fine speci- 
cimen of the architecture of the middle ages, and has a portal, called the golden door, in the true Byzantine style, a 
handhouse stone channel, and one of Silbergemann's largest 
and finest ones. There is a chapel in this church in 
which the bodies of several Saxony and elec- 
tors were of the Protestant faith, from Henry the Pious, who 
died in 1411, to John George IV., who died in 1694, are 
interred. The High-church contains a handsome monu-
ment in memory of the brave prince Maurice of Saxony, 
who fell in the battle of Sievershausen in 1553, was in 
the chancel of Cornelius Fornus of Antwerp, and another to 
the memory of Werner, who died in 1717. There are 
buildings of note in the town, among which are the town-
hall, and the school, in which the elector Augustus 
studied in his early years, and which is at present attended 
by nearly 500 pupils. The Mining Academy, which 
has attained considerable repute, is a spacious building; it 
was opened in 1767, and comprises class and lecture-rooms, 
the Wernerian museum, a bequest of its founder, which 
contains rich collections in mineralogy, &c., a geographical 
and a geographic cabinet, a museum of models of mining 
machines, and philosophical and chemical apparatus, and 
an extensive library. Werner and A. Von Humboldt were 
professors of this academy, which is conducted by many 
professors and other teachers. The old corporation of mining 
oficers, mechanics, and labourers, which had several electors 
among its members, had become nearly extinct towards 
the beginning of the present century, but was renovated with 
public solemnity on the 16th of October, 1815, by the 
mining school for educating miners in general, a school for 
teachers, a Sunday and an infant school, several primary 
schools, and a number of beneficent institutions, among 
which are an hospital, an orphan asylum, a house of in-
dustry, and infirmary.

The manufactures consist principally of articles in imita-
tion of gold and silver ware, brass wares, white lead, gun-
powder, iron and copper wares, linen, woollens, gold and 
silk lace, ribbons and tape, leather, and laces.

About three miles out of the town are the extensive 
amalgamation works for this rich mining district; and 
early are the machinery, which raises craft about fifty 
feet from the Mulde into the canal, as well as the aqu-
educt, resting on stone columns, and in other respects 
similar to the Roman aqueducts, which runs between two 
hills, but is no longer in use. In the immediate neighbour-
hood are the large mines of Himmelsstürf, near Brand, the 
'Old Hope of God,' near Voigetberg, which lies at the foot 
of 60 feet below the level of the sea; Frederic Augustus's 
mine, near Gross-Obirna; the Bescher-Glück, and Old 
Elizabeth's. (ERZGEBIRGISCHE KREIS.)

FREIBURG, a town and university in the circle of the 
Upper Rhine, in the southern part of the great duchy of 
Baden, situated on the Teissem, about 100 miles to the 
S.W. of Carlruhe, stands at an elevation of about 940 feet 
above the level of the sea, and was formerly the capital of 
the Breisgau; 49° 39' N. lat. and 7° 53' E. long. It 
contains about 15,000 inhabitants; it is a populous place, 
the number of the students, whose numbers are about 450 or 500, 
but inclusive of the adjoining villages of Herdera and Wichre 
or Adelshausen, the inhabitants of which are burghers of 
Freiburg; the population is upwards of 13,000. Twenty 
years ago the town was walled and fortified, in which 
with three gates, a fourth having been removed, and one 
suburb called Stephanie; it is in general open and well 
built, the 'Kaiserstrasse' or street of the emperor in partic-
ular being broad, and lined with handsome houses. Among 
the public edifices we notice the former house of assembly 
for the states, which is at present the archbishop's palace; 
the grand duke's palace, on the site of the former citadel; 
the government buildings; the edifice containing the courts
of justice and post-office; the old and the new university buildings, the latter of which was once a college of Jesuits: the town-hall, museum, grammar, theatre, and house of correction. Freiburg has several open places or squares, in the center of one of which, the fountain surrounded with statues of Duke Berthold III, the founder of the town, represented in the habitments of his time. Besides three Catholic churches and one Lutheran, the religious establishments have several churches and chapels attached to them. The most attractive feature in the description of Freiburg, is the cathedral or minster, probably the most beautiful and perfect specimen of Gothic architecture in Germany. It is a work of the twelfth century, begun in 1122, and not completed until 1660 years afterwards, the tower, which is 333 feet for boasted in Europe, its height is due to its large proportion of height and elegance. Though not quite so lofty as St. Stephen's at Vienna, or the cathedral at Strasburg, it is deemed to excel both in purity of style, symmetry of proportions, and beauty of construction. It is built of red sandstone and partly of more moderate materials, and covered with finely-painted glass, as well as the spire of the Minster of Zürich, a tall spire, sculptured in stone, and painted by Green, Holbein, and other artists. Holbein's Ascension of the Virgin, which forms the altar-piece, is considered one of the chief treasures of the church.

The university, which was founded under the name of the "Albertina" by the archbishop Albert VI of Austria, in the year 1314, enjoys endowments in the extent of upwards of 250,000 florins, and is possessed of a library of more than 100,000 volumes. The most attractive feature in the visit is the University Theatre and the pathological museum, a botanical garden, &c. It is likewise supported by an annual grant of about 34,000 florins from the States. There are also a gymnasmium, a preachers' residence, and seven teachers, a medical school for five teachers, a medical school for several Sunday and holiday schools, in which apprentices and others are taught reading, writing, arithmetic, and other branches of knowledge suitable to their vocations; a girls' Sunday-school, including 427 female and 600 male children, and a working school for girls and boys, where the manufactures of articles, cloth, and shoes is taught. There are a town, a university, and a medical faculty, and an orphan and foundation school, besides an institution for the relief of the poor.

Freiburg contains a large share of a more moderate sort of commerce, does of finely-painted glass, as well as the spire of the Minster of Zürich, a tall spire, sculptured in stone, and painted by Green, Holbein, and other artists. Holbein's Ascension of the Virgin, which forms the altar-piece, is considered one of the chief treasures of the church.

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FRENCH ECONOMISTS. [POLITICAL ECONOMY.]

FRERET, NICHOLAS, born at Paris, in 1688, was the son of a solicitor. He studied the law to please his family, but devoted his attention chiefly to the study of history and chronology. He was member of the Academy of the Inscriptions, and wrote numerous memoirs, chiefly upon difficult questions of ancient history and chronology. His principal works are: "Recherches Historiques sur les anciens Peuples de l'Asie," "Observations sur la Genealogie de Ptolémee," "Observations sur la Genealogie de Ptolémee," "Chronologie fondée sur les Monuments de l'Histoire ancienne, contre le Systeme chronologique de Newton." This last work was edited after Freret's death by Bougainville, who added to it a biographical notice of the author.

FRENS, a novel written in 1719, and published in 1724. The author, who was a native of Ferrara, and at the age of twenty-three, in 1740, to St. Peter's at Rome. He may be considered as the father of the true organ style, and his writings have been more or less imitated by every orthodox composer of the kind of music in which he so much excelled. His first work, says Dr. Burney, "entitled Ricerche e Canzoni Francesi, fatte sopra diversi obblighi in Partitura," contains the first compositions we have seen printed in score, and with bars. They are likewise the first regular fugues that we have met with in opera music. They were written, and were published, while the author was at his study, in the year 1766.

FRENOY, ELIE CATHERINE, was born in 1719, and educated by the Jesuits. He made himself conspicuous by his literary journal, the "Lettres," to which he began to edit in 1724, and to which he contributed a great deal. But his name was suppressed on account of some bitter attacks on several writers. Freneron changed his name, in 1749, into that of "Lettres, séries et de fêtes de ce temps." In 1754 he again changed the name of his journal to that of "Lettres françoises." Thus he succeeded in making Freneron's name synonymous with his son to some extent. But Freneron, the son (Louis Stanislas), who continued the "Annales littéraires" till 1799, became notorious during the French revolution as a violent Jacobin. He died in 1829, at St. Domingo, where he accompanied General Leclerc, being nominated sous-préfet.

FRESNOY, CHARLES ALPHONSE DU, was born at Paris, in 1611. His father, who was an apothecary, gave him a classical education, with a view to bringing him up as a physician. But an inclination for painting induced him to the study of the art, and he devoted himself to the study of the art, flatly under Perier, and afterwards with Vouet. At the age of one-and-twenty he went to Rome, where he supported himself with difficulty by taking views of ruins and buildings. Subse-

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To expect great softness, delicacy, or finish from such materials, would be obviously absurd; richness and depth of colour are equally impossible. But the very want of the inferior beauty obliges the painter to rely upon the highest—composition, drawing, and expression; and the absence of that transparent lustre which belongs to oil allows him to make his vigorous and positive contrasts of light and shade, a glare of reflected light, and displays every part of the design with the utmost distinctness and force. Fresco is however susceptible of great brightness and purity of colour. The great size which it admits of, and even demands, requires a diversity of composition, and a greater and more positive feeling of the triumph of the great painter, but an exposure for the poor one. Michel Angelo held oil painting as fit only for 'women and children,' in comparison with fresco painting. The works of Raphael alone, who had the largest collection of manuscripts, were also of the highest value. Raphael's works are painted in fresco and at Roma. With the decline of the art, fresco painting fell gradually into disuse.

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smallest degree to teach the story or the practice of painting, but it repeats some useful precepts, which cannot be too much insisted on. (Mason; *Biographie Universelle*.)

FRET, in musical instruments of the stringed kind, is a wire fixed round the neck, for the purpose of marking the exact part of the fingerboard to be pressed for the purpose of producing certain sounds. Frets are now never applied to any instruments except guitars, lutes, &c.

FREIBURG. [Freyburg.] In Switzerland, the part of the canton of the Swiss Confederation, is bounded on the north and east by the canton of Bern, south by the canton of Vaud, and west by the canton of Vaud and the lake of Neuchâtel, which divides it from the canton of Neuchâtel; it lies between longitude 7° 30' and 8°, and latitude 47° 10' and 47° 30', which is very unequal, is about 28 miles in the widest part: its area is reckoned at 261 German, or 388 English square miles: and its population in 1834 was 9,192, including resident strangers. The south part of the canton is very mountainous; the north part is covered with a belt of chain which divides the waters that fall into the Rhône and the lake of Geneva from those which flow into the Aar. The canton of Freiburg belongs to the basin of the latter river, being watered in its length from south to north by the lakes of Neuchâtel, of Morat, and of Sauris; also south of the Bienne, which is an affluent of the south part of the canton which slopes southward and flows into the lake of Geneva. The river is about 15 miles long, and has its source in the mountains of the south part of the canton, enters the lake of Morat, and issuing from it at the opposite end, empties itself into the lake of Neuchâtel.

The climate is cold in winter and subject to sudden changes of temperature in the spring and autumn. The principal productions of the soil are wheat, rye, barley, oats; good pasture, both natural and artificial, some vines and other fruit trees, especially in the lowlands near the lakes of the Morat and Neuchâtel, tobacco plantations, and timber or forest trees. In common years the canton produces about 6,000 quintals of wheat, 4,000 of barley, 6,000 of oats, 1,000 of rye, 200,000 pounds of potatoes, and 2,000 tons of hay. The cheese of Freiburg is made in the Aar district on the left bank of the Aar, in the south part of the canton, and is celebrated for its quality; the cheese is made yearly, which is worth about 75,000 to 1,000,000, sterling.

The manufactures, which are not very considerable, consist of straw-plaiting, tanning of leather, distilleries of kirsh, and iron-wares. The manufactory of iron-wares, glass-works, and paper-mills, is at St. Gallen, in the valley of Bellegarde, on the right bank of the Sarine, and are sold at Freiburg for about 5s. 6d. the hundredweight; an inferior sort is sold at Semlise, on the left bank, which sells at half the price. Toff is cut in the marshes of Morat and elsewhere.

The game consists of hares, chamois, red partridges, woodcocks, wild ducks, &c. Wolves and bears have become very rare, and stags and boars are extant. The rivers and lakes abound with fish. Tadpoles and frogs are frequent.

The natives of the canton are generally robust and well made, especially in the highlands; they are sociable, intelligent, simple in their manners, docile, and inclined to superstition. The Roman Catholic is the only religion of the canton, with the exception of the district of Morat, which contains 8,000 inhabitants who are protestants of the Helvetic church. There are also some protestants in the town of Freiburg, who obtained in 1855 permission to have a chapel and a school. The Catholic secular clergy consists of 250 members. There are besides about 200 monastic and 290 nuns, possessing a capitation of about 100,000, sterling. Popular education has been greatly neglected till lately; there are now 213 elementary schools, which in 1834 were attended by 11,000 children of both sexes. A school for teachers has been also established. The canton of Freiburg, under the direction of the Jesuits, attended by about 500 students, a boarding-school also kept by the Jesuits, a grammar-school also at Freiburg, founded in 1635, a Protestant college at Morat, and several institutions for girls in various parts of the canton. The Protestant part of the canton several French, or rather Romanice dialects are spoken, but the educated people speak real French; in the northern and eastern districts, which approach Bern, a Swiss German dialect is spoken. There is a territory comprising the country occupied by the Swiss canton of Freiburg, known in the middle ages by the name of Olland, Vechtland, and Desertum Helvetiorum, the country having been utterly desolated by the irruptions of the Alamen and other barbarians, after making the Swiss part of the kingdom of Burgundy till the 11th century; it was afterwards governed as a fief of the empire by the hereditary dukes of Zähringen, who were the benefactors of the country: they built towns, among others Freiburg 'free town,' to which they gave a franchise, and which formed in consequence a wealthy and petty feudal lords. After the extinction of the House of Zähringen, Freiburg passed under the House of Kyburg, and from this into that of Habsburg, Rudolph of Habsburg, the founder of the Austrian dynasty, erecting Freiburg into a free city in 1274. At that time the territory of Freiburg extended only about 8 miles round the town, and is still known by the name of alte landschaft, the old country. In 1450 the Duke of Austria, styled the profligate, having deprived the canton of Freiburg, known in the old language, was by Bern and the other Swiss cantons, released the citizens from their oath of allegiance, and left them to shift for themselves, after having plundered them of all their silver and plate. Freiburg, the territory of which had been raised to the dignity of the Dukes of Savoy. In the war of Burgundy it took the part of the Swiss against Charles the Bold, in recom pense for which it was received into the confederacy as a sovereign canton or state in 1814. By that and the subsequent Napoleonic acts, Freiburg regained the territory to its present extent, at the expense of the neighbouring lords and of the dukes of Savoy.

The government, which was originally a popular municipality like that of Bern, all the burgheers having the electorate in the hands of the Parlement, and the Parlement electing towards its new subjects, and even in the town of Freiburg and its old territory the Great Council or legislature came to be a self-renewing body, the seats in which were monopolized by a limited number of patrician families long established in the place of the former magistracy, and the lower clergy, the environs and the outskirts of all Switzerland. After the political changes of 1798-1815, a fourth part of the seats in the Great Council was given to the country members, the rest remaining in the possession of the patricians. In December, 1830, the people and part of the citizens, belying the demand a total change in the government, and after some demur the Great Council composed; a new constitution was framed, by which all burgheers, of either town or country, having the freedom of a commune, 3, 4, or 5, and who are heads of families, are eligible for the Great Council of the state, and partake of the right of voting in the urban assembles, while the representatives and the assemblies choose the electors in the proportion of one for every 100 souls. The electors assemble in the head town of their respective districts, forming what is called the electoral college, which elect the members to the Great Council or Supreme Legisrate, in the proportion of one for every 1000 souls. The members are appointed for nine years. The Great Council holds two ordinary sessions every year, in May and November. It appoints the council of state, the executive council of the state, composed of ten years, and the court of appeal 13 judges for life. The Avoir is president of the council of state and is elected by its members for two years. The canton is divided for administrative purposes into 3 districts, each with a representative body and a council of state, the head towns of which are Freiburg, Morat, and Monbrun. The town of one of the districts, situated on the right bank of the lake of the same name, has about 16,000 inhabitants, carries on a considerable trade, is a college, a public library, a subscription library, an hospital, an orphan asylum, and a castle, built in the 14th century. Near it is a
a pyramid raised in 1832, in commemoration of the battle against Charles of Burgundy, the old chapel and ossuary having been destroyed by the French in 1799. The lake of Morat, in German Murtensee, is about five miles long and two broad, and about 160 feet in its greatest depth; it abounds with fish. It is subject to floods, at which time the water overflows the embankment and rushes mostly towards the north, in the direction of the lake of Bienne.

Every district has a prefect, appointed by the council of state for six years, and a court of première instance. The communal administration of the convents, greatly according to the temper and instruction of the respective populations. Several of the communes have divided their communal lands, and established common dairies, have formed savings' banks, in order to get rid of the scourge of pauperism, but other towns have been prudent. The waste of their communes and forests, encumbered with baggers. A few have taxed themselves for the support of their poor. The 'heathen', or men without a settlement, who amount to 390 families, and strangers, called 'strangers', have also been taxed by the municipal offices. By a law of 26th May, 1834, natural children have been admitted to the same political rights as legitimate ones. The roads, which were proverbially bad in this canton, begin to improve; in 1834, the Great Council voted a loan of 55,000 francs, for the purchase of a road object. A new civil code has been compiled, and the obligatory registry of mortgages has been established. A commission has been appointed for the revision of the penal laws, which were barbarous, as in most other cantons in Switzerland. Fortune has been altered. In the year 1834, the list of crimes which came before the court of appeal was as follows: forty-one thefts or robberies; eleven assaults and battery; two forgeries; two frauds, and one dereliction of ouf infant. In the same year the number of births was 25,434, and the deaths 12,860.

The revenues of the canton are derived from the dines or titres on land, from the feudal rights and dues with which many properties are still encumbered, and which are collected by the state, though by a law of 1832 the people are placed in possession of them. The duties arising from the forests belonging to the state, from the interest of capital, from customs and other indirect taxes, from fines, and from the post-office, and other rights called régates, formed the chief revenue in 1834 amounted in 412336 Swiss francs (a Swiss franc is equal to 1 French franc), and was nearly all absorbed by the expenditure, of which the principal items were: general administration, 56,640 francs; department of justice, 47,780; military, 47,870; general provision of the poor, 47,035, prisons, &c., 66,557; bridges, 52,352; town halls, 58,547; public instruction, 627; miscellaneous expenses, 83,000.

The militia of the canton consists of 2,265 men, of whom some companies perform duty by turns, and all must be in readiness without reserve for federal service. The landwehr, consisting of all the men capable of bearing arms in case of necessity.

The French is now adopted as the language of the government but all laws, decrees, and resolutions, must be published both in French and German. The press is free, but subject to laws against abuses of it.

There are about 100 holidays kept in the year, including Sundays; during a favourite diversions of the people, was formerly allowed only on certain days, but now a general permission.

(Lerescue, Dictionnaire Geographique Statistique de la Suisse 1836; Genäule der Schweiz, der Canton Freiburg, St. Gall, 1833; Dandolo, Scritziara Occidentale, Cantone di Freiburg, Freiburg.)

FREIBURG, Freiburg in French, the capital of the canton, is built on several steep hills on both banks of the river Sarine, and its appearance is extremely bold and picturesque. Part of the houses rise along the slope of the hills, others are supported by massive substructions and buttresses, and are supported from each other by deep ravines. Naked rocks, gardens, trees, and green fields are seen intermixed with churches, convents, and other buildings, the whole being surrounded by ramparts flanked with towers. Four bridges join the two banks of the Sarine, one of which is a suspension-bridge, erected in 1834, one of the finest in the world; its length is 895 feet, and it stands 170 feet above the level of the river. The other remarkable structures in the town are: 1. the town-house, built in the sixteenth century, in which the great council meets; 2. the collegiate church of St. Nicholas, built in the twelfth century; 3. the college of St. Michel, kept by the Jesuits, with an establishment for boarders, in which several hundred young men, mostly foreigners, are educated; 4. the monastery of St. Martin, one of the numerous foundations (for the maintenance of which Father Girardini, the zealous promoter of popular education, was an inmate; and several other convents and churches. The population of Freiburg, in 1834, was 8353, including about 1000 natives of other cantons of Switzerland, and 833 foreign residents. The occupations are the same as in other parts of Switzerland, woollens, pottery, tobacco, and straw hats; there are also two printers and six booksellers. The scientific societies are the following: those of archeology, of natural sciences of medical science, and of public economy, a literary club, and a tennis club. The annual services of the church, consisting of the commemoration of Sts. Anthony, 1798, is marked by a magnificent procession.

FRIARS, from the French frères, a term in strictures meaning the brethren of a community, but more particularly applied to a new order of religious persons, who mostly sprung up at the beginning of the thirteenth century, and were ordered by the pope. In imitation of the early monastic institution, the ample endowments of which had led it to degenerate from its primitive austerity, and yield to luxury and indulgence.

These Friars consisted of Dominicans, Franciscans, Trinitarians or Mary-Sisters, Crossed or Grafted Francs, Austin Friars, Friars of the Sac. Bethlemites, Friars of the Order of St. Anthony, of Vienna, Friars de Pica, and Bonhommnes of Good Men. These last were brought into England by Edmund, Earl of Cornwall, in 1265, and a colony of them received at Ave Maria in Buckinghamshire. The Capuchins and Observants were distinctions of the Franciscan Friars.

Warton, in his 'History of English Poetry,' speaking of the Mendicants, forsooth, a saucy and impertinent wagging, being distilute of fixed possessions, says, these societies were soon surpassed all the rest, not only in the purity of their lives, but in the number of their privileges, and the multitude of their members. Not to mention the peace which attends them, the monks of the Mendicants are no less happy in other respects than in being entirely independent, which gave them opportunities of appearing in public and conspicuous situations, they exhibited more striking marks of gravity and sanctity than were observed in the deportment and conduct of the members of other monasteries, and they were regarded with the highest esteem and were esteemed throughout all the countries of Europe. In the mean time, they gazed still greater respect by cultivating the literature then in vogue with the greatest assiduity and success. Giannon says, that most of the theological professors in the universities of Oxford and Cambridge, and all the grandees of society, were chosen from the mendicants. They were the principal teachers of theology at Paris, the school where this science had received its origin. At Oxford and Cambridge, respectively, the four great orders (the Franciscans, Dominicans, Carmelites, and Augustinians) were represented, the Franciscans, as we have seen, being the most learned scholars in the university of Oxford, at the close of the thirteenth century, were Franciscan friars, and long after this period the Franciscans appear to have been the sole support and ornament of that university.

The buildings of the mendicant orders, especially of the Franciscans, in England, were remarkably magnificent, and commonly much exceeded those of the endowed convents of the second magnitude. As these fraternities were professedly poor, and could not from their original institution receive estates, the buildings of which were employed in adorning their houses with stately refectories and churches, and for these and other purposes they did.

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not want address to procure multitudes of patrons, which was facilitated by the notion of their superior sanctity. It was fashionable for persons of the highest rank to bequeath their bodies to be buried in the friary churches, which were consequently filled with sumptuous shrines and superb monuments. In the noble church of the Grey Friars in London, the four queens, besides upwards of six hundred persons of quality, were buried, whose beautiful tombs remained till the Dissolution. These interments imported considerable sums of money into the mendicant societies. It is probable that they derived no benefit from this charity than they would have gained from a regular endowment. The Franciscans indeed enjoyed from the popes the privilege of distributing indulgences, a valuable indemnification for their voluntary poverty.

When two of these mendicant institutions, the Dominicans and the Franciscans, for the space of near three centuries, appear to have governed the European church and state with an absolute and universal sway; they filled, during that period, the most eminent ecclesiastical and civil stations, and possessed an authority which silenced all opposition, and maintained the disputed prerogative of the Roman pontiff against the united influence of princes and kings, with a vigour only to be paralleled by its success. The Dominicans and Franciscans were, before the beginning of what the Jesuits have been since. They disregarded their monastic character and profession, and were employed not only in spiritual matters, but in temporal affairs of the greatest consequence; in composing the differences of princes, concluding treaties of peace, and executing great orations; they presided in cabinet councils, levied national subsidies, influenced courts, and managed the machinery of every important operation and event, both in the religious and political world.

From what has been here said, it is natural to suppose that the Franciscans at length became universally odious. The high esteem in which they were held, and the transcendent degree of authority which they had assumed, only served to render them obnoxious to the clergy of every rank, to the monasteries of other orders, and to the people. Their authority was unbounded, and their arrogance intolerable. Their increasing numbers became, in many states, an enormous and unwieldy burthen to the commonwealth. They had abused the powers and privileges which had been entrusted to them, and the common sense of mankind could no longer be blinded or deluded by the palpable frauds and artifices which these rapacious zealots so notoriously practised for enriching their convents. The esteem for them degenerated greatly on the Continent. In England, at the dissolution of the Franciscan houses, they fell as unprofitable and destitute as the rest of the monasteries.


SECTION II. If the surfaces of two solid bodies in contact are conceived to be perfectly smooth or geometrical surfaces, and to be subject to the action of any external forces, the determination of the circumstances both of their equilibrium and motion requires that we take into consideration their mutual resistance as a moving force, such as is found in the opposite directions of the common normal, at the point or points of contact. This force is strictly proportional to the pressure mutually exercised, which in the case of equilibrium is the resultant of the external forces applied to or from which in curvilinear motions we must add or subtract the pressure arising from centrifugal force.

But as all natural surfaces have certain degrees of roughness arising from the innumerable small aspersities with which they are covered, it becomes necessary to attend to the force of friction acting in the tangent plane of the surfaces in a direction opposite to that in which the surfaces move or tend to move. Friction is therefore a retarding force capable of destroying but incapable of generating motion, and is the common source of falls of bodies, and capable of acting powerfully as a mechanical force, of which the tendency is to destroy stability. It is therefore of great importance in the useful arts of life to be acquainted with its laws, to know how to increase it, as in the construction of arches, and how to diminish it, as in the machinery of clocks, and in all works in which it is an object to economise the expense of force.

The attempt to discover the laws of friction from abstract considerations on the constitution of bodies has not led, nor could have been expected to lead, to trust-worthy results. This research belongs properly to the province of experiment. The objects are within our reach, and the proper modes of experiment being obvious. But the variety of solids of different planes and shapes would lead us to anticipate a corresponding variety of results; it is therefore necessary to aim at properties connected with causes independent of the constitution of the surfaces concerned, but of such a nature as may be influenced by the time, or duration of contact, by the nature of the pressure of the surfaces, by the extent of the surfaces in contact, and by the velocity of the motion.

These questions were answered in a very contradictory manner by Arnauld, Euler, Poncelet, Lagrange, d'Alembert, &c.; the reason for which disagreement was, that abstract notions and hypotheses took, wholly or partly, the place of experiment, and the little of experiment which was admitted was very indifferently executed.

The importance and uncertainty of the subject at length attracted the notice of the French Academy of Sciences, and Coulomb published, in 1781, the results of an extensive series of experiments (in the Mémoires des Savans Etrangers) which were commenced in 1779. The high character of Coulomb as a sagacious experimenter has preserved this memoir in great repute to the present time, and some of the laws which he inferred have been gradually confirmed, while others have been modified or rejected.

Professor Vince, of Cambridge, a few years after the publication of the foregoing memoir, has arrived at results which are in no small degree similar to the uniformity of the retarding power of friction, and confirmed that when cloth and woollen are employed, an increase of retardation accompanies an increase of velocity. To Mr. Southern are due some experiments of a similar nature, but the results of his researches are not sufficiently simple to secure certainty to his conclusions. Several able experimentalists, as Wood, Tredgold, Rennie, Morin, &c., have continued the same class of valuable researches up to the present date; and though the results on the quantity of friction compared with one another are not very exact, some few laws of friction may be regarded as being nearly if not altogether established. The subject still offers a vast field of research.

The following appear to be the most general results which have been yet obtained by observation on friction:—

1. Friction is increased by time; thus it requires the application of a greater force to move a weight along a horizontal plane from its position of rest than to keep it afterwards moving on the same plane.

2. One of the chief methods of estimating friction rather uncertain. The method alluded to consists in placing the weight on a plane of which the position at first is horizontal, and gradually elevating one extremity of the plane to an inclination sufficient to cause the imposed weight to move downward; this is called the terminal inclination, and determines the ratio of the friction to the pressure; but during the operation, before the weight commences to move, its aspersities become more deeply involved between those of the plane than when first placed on or when in motion; and it has been observed by giving a light tap to the plane, the small vibrations produced are sufficient to free the weight from the acquired hold of the plane, when it would descend at a much lower inclination corresponding to its true index of friction. In other methods for obtaining the true index of friction, the surface of the plane that which only exists at the commencement of the motion, has not been sufficiently attended to, and must therefore have vitiated the results: this uncertainty is not removed even in the experiments of Mr. Rennie afterwards noticed.

2. Between substances of the same nature the friction is proportional to the pressure; thus, if a block of oak be of double the weight of another, and both, having equal surfaces of contact, are placed on one plane of uniform nature, the force to move the greater is double of that necessary to move the first; but different trials which are mutually compared: for when a rectangular block of oak is placed on an oak table so that
the fibres in both lie parallel, the friction is greater than in the case where the fibres of the block lie transversely to those of the table.

4. The friction is independent of the velocity, at least when the velocity is neither very small nor very great.

Friction is always constant when there is a constant retarding force, and consequently when a body is drawn on a plane by the action of gravity, or by the intervention of a pulley and cord, which causes it to communicate with a vertically descending weight, the spaces it passes over will be proportional to the square of the time measured from the origin of its motion.

There are other modifications of friction besides that of simple attraction, which belong to various heads, as Rigidity of Ropes, &c. We shall now give some account of the results of experiments, and carefully the several arrangements which have been published on this subject.

In the 'Philosophical Transactions' for 1829, Mr. George Rennie published his experiments on the friction of attraction relative to several solid substances, such as ice, from its resistance to sledge, &c.

Cloth, because of its anomalous properties compared with other solids.

Leather, of so much use in the pistons of pumps, &c. Wood, in its application to pile-driving, carpentry, &c. Stones, from their importance in arches and other constructions.

And metals, from their extensive application to machinery, carriages, railroads, &c.

We must refer to the memoir itself for the tabulated results of experiments, and to the author's valuable remarks thereon; and we shall only extract some of the experiments on wood and metals, as they are of the most extensive employment in machinery. Without underestimating the experiments by the inclined plane, we decidedly prefer those referring to friction on a horizontal plane, which is to be understood in the following tables.

**FRICTION OF WOODS TWO INCHES SQUARE.**

<table>
<thead>
<tr>
<th>Weight on red</th>
<th>Proportion</th>
<th>Average</th>
<th>Weight on black beech</th>
<th>Proportion</th>
<th>Average</th>
<th>Weight on Norway oak</th>
<th>Proportion</th>
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<tbody>
<tr>
<td>lbs.</td>
<td>8:14</td>
<td>10:14</td>
<td>15:14</td>
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<td>lbs.</td>
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<tr>
<td>lbs.</td>
<td>14:14</td>
<td>15:14</td>
<td>25:14</td>
<td>7-53</td>
<td>8-68</td>
<td>8-31</td>
<td>8-68</td>
<td>8-31</td>
</tr>
<tr>
<td>lbs.</td>
<td>17:14</td>
<td>15:14</td>
<td>30:14</td>
<td>7-53</td>
<td>8-68</td>
<td>8-31</td>
<td>8-68</td>
<td>8-31</td>
</tr>
</tbody>
</table>

**Comparative Amount of the Friction of different Metals under an average Pressure of from 54 to 58 lbs. to 69 lbs.**

<table>
<thead>
<tr>
<th>Name of metal</th>
<th>Average weight</th>
<th>Proportion</th>
<th>Weight per square inch.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lbs.</td>
<td>lbs.</td>
<td>lbs.</td>
<td>lbs.</td>
</tr>
<tr>
<td>Brass on wrought iron</td>
<td>69-55</td>
<td>7-219</td>
<td>11</td>
</tr>
<tr>
<td>Steel upon steel</td>
<td>69-55</td>
<td>6-160</td>
<td>11</td>
</tr>
<tr>
<td>Brass upon brass</td>
<td>69-55</td>
<td>6-745</td>
<td>11</td>
</tr>
<tr>
<td>Brass upon brass</td>
<td>69-55</td>
<td>6-592</td>
<td>11</td>
</tr>
<tr>
<td>Hard brass upon cast iron</td>
<td>69-55</td>
<td>6-592</td>
<td>11</td>
</tr>
<tr>
<td>Hard brass upon wrought iron</td>
<td>69-55</td>
<td>6-592</td>
<td>11</td>
</tr>
<tr>
<td>Cast iron upon cast iron</td>
<td>56-6</td>
<td>6-475</td>
<td>8</td>
</tr>
<tr>
<td>Cast iron upon wrought iron</td>
<td>56-6</td>
<td>6-475</td>
<td>8</td>
</tr>
<tr>
<td>Tin upon brass</td>
<td>69-55</td>
<td>6-602</td>
<td>11</td>
</tr>
<tr>
<td>Tin upon tin</td>
<td>69-55</td>
<td>6-592</td>
<td>11</td>
</tr>
<tr>
<td>Tin upon brass</td>
<td>69-55</td>
<td>6-592</td>
<td>11</td>
</tr>
</tbody>
</table>

The preceding table is a little abridged.

From hence it would appear that hard metals have less friction than soft ones, and that the friction of hard against hard may be generally estimated at about one-sixth of the pressure.

From his experiments on the friction of axes without guineers, Mr. Rennie remarks that when gun-metal is loaded with weights varying from one to ten hundred weight, the friction varies nearly in the proportion of 1/8 to 1/4, of the pressure, and is scarcely affected by time; that it was increased when yellow brass, and decreased when cast-iron was tried; and still more so when black-lead was used instead of metal.

Relative to unguents the experiments show that for gun-metal on cast-iron with oil intervening, and a weight of ten hundred weight, the friction amounted to 1/4 of the pressure, but on diminishing the insistent weights the friction was diminished to 1/64, cast-iron, under similar circumstances, showed less friction, which was also diminished by log's hard when loaded.

From hence it may be inferred that the lighter the insistent weights, the finer and more fluid should be the unguent and the metal.

His experiments on hide-leather soaked in water, compared with dry leather, show that the soaking causes the friction to be subjected much more to the influence of time and weight.

Amongst the conclusions which Mr. Rennie draws, the following are perhaps the most important.

With fibrous substances, such as cloth, &c., friction is increased by surface and time, and diminished by pressure and velocity.

With harder substances, such as woods, metals, and stones, the amount of friction is simply as the pressure, without regard to surface, time, or velocity.

Fricion is greatest with soft and least with hard substances. The diminution of friction by unguents depends on the nature of the substances, without reference to the substances moving over them.

Subsequent to the publication of Mr. Rennie's memoir, M. Arthur Morin, captain of artillery, commenced a series of experiments on friction at Metz, in 1831, which he continued by another series in 1832; they form the subjects of two memoirs in the volume of the 'Mémoires de l'Institut' for 1833. The author's object was to repeat the experiments of Coulomb, with the view of either verifying, or correcting them. The amounts of friction which he obtains differ great from those given by Coulomb, who, in his opinion, must have frequently employed materials improperly prepared, and committed other oversights, whence he accounts for the errors into which he has fallen. The results of M. Morin's experiments go completely to establish the four laws of friction mentioned at the beginning of this article.

The description of the apparatus which he employed would be too long to be inserted here, but it seems very ingenious and well adapted to obtain that precision and neatness of measurement which has been requisite to the success of observarions of this nature valuable. The motions were horizontal by means of a cord and pulley, but the most curios part of the apparatus is a diamometer, to measure the tension of the cord by the inflexions of an elastic lamina attached to it and to the moving train, the state of which was determined by a penit-trace on paper laid on a circular plate of copper, having a uniform rotation. He was thus enabled to compare the space described, whether in retarded, uniform, or accelerated motions of the train, with the time elapsed, and confirms the conclusions that friction is a uniformly retarding force. The relations between the radii vectors of the curve described, with the corresponding angle at the centre, which is proportional to the time, enabled him in the various cases to represent by a curve with rectangular coodinates the relation between the space and time, the latter curve being generally a parabola; the idea of this invention, he says, was suggested to him by M. Poncelet. His results however differ in amount so greatly from those of Coulomb, and most others who have made friction the subject of experiment (though leading to, and confirming, the same general laws), that it may be permitted to doubt whether a source of error may not be somewhere concealed in the dynamometer employed.

In the following tables we give some of the more important results of his first memoir; the first referring to surfaces which have been for some time in contact; the second giving the friction during motion; and in both cases without the employment of unguents.

I. Friction of plane surfaces which have been some time in contact.

II. Friction of plane surfaces in motion.
Some of the above ratios are three times as great as those given by Coulomb. M. Morin's second memoir is more particularly directed to surfaces with unguents, or coatings; and here he comes more nearly with Coulomb, but not so much to the mode in which the latter conducted his experiments, and which may possibly have permitted some of the lighter unguents to escape from the surfaces during the process. The very complete table with which his paper is far too long for insertion here; the following is an abridgment, having reference to substances which are of frequent usage, or of small friction.

### Table III. Surfaces in Motion.

<table>
<thead>
<tr>
<th>Names of the surfaces in contact</th>
<th>State of the surfaces</th>
<th>Disposition of the fibres</th>
<th>Ratio of friction to pressure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak upon oak</td>
<td>Coated with lard</td>
<td>Parallel to the direction of motion</td>
<td>0.065</td>
</tr>
<tr>
<td>Iron upon oak</td>
<td>Chiseled</td>
<td>Parallel to the direction of motion</td>
<td>0.025</td>
</tr>
<tr>
<td>Elm on oak</td>
<td>Tallow coating</td>
<td>Parallel to the direction of motion</td>
<td>0.025</td>
</tr>
<tr>
<td>Yokel-elm on cast iron</td>
<td>Coating of hog's lard and black lard</td>
<td>Parallel to the direction of motion</td>
<td>0.025</td>
</tr>
<tr>
<td>Tamarind on hide on bronze</td>
<td>With oil of olives</td>
<td>Parallel to the direction of motion</td>
<td>0.032</td>
</tr>
<tr>
<td>Brass on bronze</td>
<td>With brass</td>
<td>Parallel to the direction of motion</td>
<td>0.019</td>
</tr>
<tr>
<td>Cist lime on brass</td>
<td>With brass</td>
<td>Parallel to the direction of motion</td>
<td>0.024</td>
</tr>
</tbody>
</table>

M. Morin received every facility from his government in the pursuit of these important researches, while his industry testifies that he well merited such assistance. The uncertainties and discrepancies of observations would soon disappear if other researches were conducted with a moderate elevation. The remainder are low. The most southern group, the Tonga-tuab Islands, were discovered by Tasman in 1643. The largest of them, Tonga, is about 25 miles long and 12 miles wide, in the broadest part. It rises about 80 ft. above the sea, and its summit is a level plain. On the northern side an excellent roadstead was discovered by Cook. The central group, called the Hapai islands, is composed of a considerable number of small islands. The largest of them is Lepepega, about 9 miles long and 9 miles wide. All these islands are low and very fertile. The most northern group is formed by the Vavauo islands, which are likewise small and low, except the island of Vavauo, which is about 36 miles in circumference; its surface is uneven, and on the northern side rises to a considerable elevation. On its southern side is Curtis Sound or Puerto de Refugio, one of the most spacious and safest harbours in the Pacific. The most northern island belonging to this group is Amargare or Gardner island in 17° 57' S. lat. The most southern of the Friendly Islands is Pylstaart, in 22° 26' S. lat.

These islands are remarkable for the mildness of their climate, their fertility, and the great variety of their vegetable productions. For food, there are cultivated and planted banana-trees, with fruit-fruit, the great-fruit tree, the walnut, the banana, and sago; the Chinese paper mulberry-tree is cultivated for its inner bark, from which the clothing of the inhabitants is made. Hogs and dogs are numerous, and both are used for food. Fish is plentiful, and also different kinds of birds, as owls, pigeons, parrots, and the tropical pigeons. The women and their ornaments are, whose beautiful feathers here, as in other islands, are used as an ornament.

Cook called these islands the Friendly Islands, because he was received by the inhabitants in a very friendly manner; but it is now known that they thought it best to seize his vessels. They are a very industrious people, and pay great attention to the cultivation of the soil. They apply themselves also to fishing, and evince much ingenuity in the manufacture of their clothing, and of their domestic utensils. They have a complete religious system, priests and festivals, and sometimes they sacrifice men, but they do not eat them. Missionaries have now for some time been established on these islands, but we are not yet acquainted with the results of their labours. The inhabitants belong to the Malayan race, and speak a language which is distinctly different from that spoken in many other islands of the Pacific. The political constitution is a despotism, supported by an hereditary aristocracy. The number of the inhabitants is estimated at about 200,000.

Cook's 'Voyages,' Captain John's 'Account of the Tonga Islands: Krusenstern's 'Atlas de l'Océan Pacifique.'

**FRIENDLY SOCIETIES.** These institutions, which if founded upon correct principles and prudently conducted, are beneficial both to their members and to the community at large, and in every age and all climate, Mr. Turner, in his 'History of the Anglo-Saxons,' notices them in these words: 'The guilds, or social corporations of the Anglo-Saxons, seem on the whole to have been friendly associations made for mutual aid and contribution to meet the pecuniary exigencies of those who by their work naturally arising from them, received no emolument, except what was paid by their employers, or by penalties of various kinds.' These social corporations of our ancestors differed from the friendly societies of modern times, both as regarded the quality of their members, who were not confined to the poorer or working classes, and also as regarded their objects. It is now no longer necessary to establish a mutual guarantee against legal exactions and penal mutilations, and the objects of friendly societies are now limited to an insurance against the natural contingencies of sickness, infirmity and death.

Until a comparatively recent period, the principles upon which these societies should be conducted were ill understood, and as their management was confined to persons of insufficient attainments, the common result was a speedy dissolution of the objects for which they were originally established. It is said to have been established in 1715; but this fact rests only upon tradition, and is unsupported by any records in possession of the body.

The earliest occasion upon which the objects contemplated by these societies can be said to have received the sanction of either branch of the English legi-lature was in 1773, when a bill brought into the House of Commons by Mr. Dowdeswell, and supported by Sir George Savile, Burke and others, passed that house, but was thrown out by the House of Lords. The bill which was then passed by that chamber, and became an Act of Parliament, was, after its several amendments and restrictions in certain circumstances, by enabling parishes to grant them annuities for lives upon purchase, and under certain restrictions.' A bill with a similar object met with the like fate in 1786, having passed through the Commons, but being thrown out by the Lords. A bill introduced in 1793 by Mr. George Rose passed into a law, which is known by his name, and was extensively acted upon. This act received that the protection and encouragement of Friendly Societies in this kingdom, for securing, by voluntary subscription of the members, the comforts and relief of the poor, the maintenance of the poor in sickness, old age, and infirmity, is likely to be attended with very beneficial effects, by promoting the happiness of individuals, and at the same time diminishing the public burthens.' This act authorized any number of persons to form their bodies into a society of good fellowhip, for the purpose of raising funds, by contributions or subscriptions, for the mutual benefit of each other, and authorized such a society to receive contributions in money, goods and other commodities. This act also declared that 'the State was desirous of granting a charter to a Friendly Society, which might extend its branches to the different parts of the kingdom, in order that its benefits might be more widely diffused.'
relief and maintenance of the members in old age, sickness, and infirmity, or for the relief of widows and children of deceased members. A committee of members was authorised to frame regulations for the government of the society, which regulations, after being approved by the majority of the subscribers, were to be exhibited to the justices of the peace for the county wherein the society is formed, and by him to be laid before the justices at quarter-sessions, who are required to confirm the same, after which the rules and certificate are to be filed with the rolls of the sessions of the peace, and a certificate of the same to be returned by the justices to the members of the society, and to be entered on the margin of the野外 of the proceedings thereon, making such rules conformable to the true intent and meaning of the act, to be confirmed and made binding upon the subscribers.

Among other provisions, it was allowed to impose reasonable fines upon those members as should offend against the regulations; such fines to be applied to the general benefit of the society. By this act it was declared unlawful 'to dissolve or determine any such society, so long as the intents or purposes declared by the society remain to be carried into effect, with all the acts and proceedings of the members, or that exists and existing members and also of all persons then receiving or entitled to receive relief from the society, on account of sickness, age, or infirmity.' Societies thus constituted were relieved from the payment of certain stamp-dues, and any act was declared to have the same effect as would have been the result of an act of the county council to carry on the suit without fee or reward. An act was passed for the adoption and management of a society for benevolent and charitable institutions and societies formed in this kingdom for the purpose of relieving widows, orphans, and families of the clergy and others in distress circumstances. Several other acts were passed between 1823 and 1834, which exercised a similar influence to that of the act of 1819; but as this and all other acts previously passed with the same object were repealed and superseded by the act of 1829 (10 Geo. IV. c. 56), which with two acts passed in 1832 and 1834 (2 Will. IV. c. 37, Fund 4 and 5 Wt. IV. c. 40), contain the law as it now stands for the regulation of friendly societies, it is unnecessary to detail here the alterations effected in 1819.

In the years 1825 and 1827, select committees were appointed by the House of Commons to inquire into the regulation relating to friendly societies. The reports made by these committees have thrown considerable light upon the subject, and prepared the way for the enactment of 1829, already mentioned, which, with the subsequent acts of 1832 and 1834, contains the law of friendly societies.

The law of 1829, in the first place, authorizes anew the establishment of societies within the United Kingdom, for raising funds for the mutual relief and maintenance of the members, and gives protection to all such societies then existing, while it affords encouragement for the formation of like associations for the mutual relief and maintenance of all and every the members thereof, their wives or children, or other relations, in sickness, infaney, advanced age, widowhood, or any other natural state or contingency whatever, which might otherwise be deemed too uncertain or of too limited a value. The members of such societies are to meet together to make such rules for the government of the society as shall not be contrary to the intent of the act nor repugnant to the laws of the realm, and to impose such reasonable fines upon the members who offend against any of such rules as may be necessary for enforcing them; and these rules, which must be passed by a majority of the members present, may be altered and amended from time to time by the same authority. But before these original or amended rules shall be confirmed by the justices of the county at the general quarter-sessions, they must have inserted in them a declaration of the purposes for which the society is established, and the uses to which its funds shall be applied, stating in what shares and proportions and for what circumstances any member of the society or other person shall be entitled to the same; and further it is required that the rules so passed shall be submitted, in England and Wales and Berwick-upon-Tweed, to the barri

The officers here mentioned are respectively to settle such rules, and make them conformable to law and to this act of parliament, giving a certificate of this regulation having been complied with. The rules so certified are then to be deposited with the clerk thereof for the county wherein the society is formed, and by him to be laid before the justices at quarter-sessions, who are required to confirm the same, after which the rules and certificate are to be filed with the rolls of the sessions of the peace, and a certificate of the same to be returned by the justices to the members of the society, and a certified copy of them shall be received in evidence in all cases. The treasurer of each society must give receipt for the monies of the society, and may forthwith disburse them for the benefit of the members, or such sufficient sureries, for the faithful performance of his trust, and must, on the demand of the society, render his accounts and assign over the funds of the society at the demand of a meeting of the members. The property of the society is to be vested in the hands of three justices of the peace, or in any two of them; and he may have been a member of the society or of any other society or associations for the benefit of the members, or in the hands of one or more of their representatives, entitled to his account to receive any sum from the funds of the society not exceeding £20, and the treasurer or trustees may pay the money to the persons entitled to receive the property of the deceased member, or to the order of the members, or to appear in court and give such further or other reasons for the necessity to take out letters of administration.

It is not lawful to dissolve any friendly society, so long as any of the purposes declared in its rules remain to be carried into effect, without obtaining the votes of consent of five-sixths in the society; and the consent of all persons then receiving or entitled to receive relief from such society; and for the purpose of ascertaining the votes of such five-sixths in value, every member shall be entitled to one vote, and an additional vote for every five shillings he may have been a member. In case any person shall desire to have such society, it is unnecessary to detail here the alterations effected in 1819.

The rules of the society are to contain a declaration whether, in the event of any dispute or difference arising between the society and any one of its members or of its representatives, or of any of its officers, the matter shall be referred to the decision of a justice of the peace of the county or of arbitrators; if to the latter, the arbitrators must be chosen or elected in sufficient number at the first meeting of the society which shall be held after the enrolment of its articles of incorporation, and shall be empowered by the members of the society to ascertain the votes of such five-sixths in value, in the funds of the society; and whenever the necessity for their employment shall arise, a certain number, not exceeding three, are to be chosen by ballot from among the arbitrators for the settlement of the dispute, and the arbitrators are empowered to enforce compliance with the decision of the arbitrators. If the rules of the society direct the application, in cases of disputes, to justices of the peace, any justice is empowered to summon the person against whom complaint is made, and any two justices may hear and determine the matter, their sentence being final and conclusive. If, in the event of any dispute or difference arising between the society and any one of its members or of its representatives, or of any of its officers, the matter shall be referred to the decision of a justice of the peace of the county or of arbitrators; if to the latter, the arbitrators must be chosen or elected in sufficient number at the first meeting of the society which shall be held after the enrolment of its articles of incorporation, and shall be empowered by the members of the society to ascertain the votes of such five-sixths in value, in the funds of the society; and whenever the necessity for their employment shall arise, a certain number, not exceeding three, are to be chosen by ballot from among the arbitrators for the settlement of the dispute, and the arbitrators are empowered to enforce compliance with the decision of the arbitrators. If the rules of the society direct the application, in cases of disputes, to justices of the peace, any justice is empowered to summon the person against whom complaint is made, and any two justices may hear and determine the matter, their sentence being final and conclusive. If, in the event of any dispute or difference arising between the society and any one of its members or of its representatives, or of any of its officers, the matter shall be referred to the decision of a justice of the peace of the county or of arbitrators; if to the latter, the arbitrators must be chosen or elected in sufficient number at the first meeting of the society which shall be held after the enrolment of its articles of incorporation, and shall be empowered by the members of the society to ascertain the votes of such five-sixths in value, in the funds of the society; and whenever the necessity for their employment shall arise, a certain number, not exceeding three, are to be chosen by ballot from among the arbitrators for the settlement of the dispute, and the arbitrators are empowered to enforce compliance with the decision of the arbitrators. If the rules of the society direct the application, in cases of disputes, to justices of the peace, any justice is empowered to summon the person against whom complaint is made, and any two justices may hear and determine the matter, their sentence being final and conclusive.
members, every one of whom may receive a copy of the statement on payment of a sum not exceeding sixpence.

Every friendly society controlled under this act is obliged, within three months after the end of the year 1834, and again within three months after the expiration of every five years, to transmit to the clerk of the peace for the county in which the society is situated a return of the rate of sickness and mortality, according to the experience of the society during the last five years, stating the number of lives covered in a prescribed form to insure uniformity; and the clerks of the peace are directed, within one month after the periods just named, to transmit these returns to the Secretary of State, with a view to their being laid before parliament.

In case the society shall not, or be unable to, transmit these returns within the time specified, the clerk of the peace shall call upon them to make the return within 21 days; and should they neglect to comply with this demand, the society shall cease to enjoy the benefits of the act, unless a sufficient reason shall be assigned to the justices when they next ensuing quarter-sessions, why such returns could not be made.

The provisions and privileges of this act were extended to all such existing societies as should conform to its provisions within the time specified by the act, after which time all friendly societies which should not so conform were to cease to be entitled to the privileges granted to friendly societies by this act or by any other act of parliament.

The act directed to Miraculous Missions, 1834, the time during which existing societies might conform to the provisions of the act of 1829, and declared its privileges to extend to all societies formed for the relief of the widows, orphans, and families of clergymen, both of the established church and of dissent.

The provisions of the act of 1834 are for the most part confined to matters of regulation which it is not necessary to notice here. The returns relating to sickness and mortality are by this act directed to be made to the barrister appointed to certify the lives of those societies, and transmitted to the clerks of the peace, as ordered in the act of 1829.

Societies thus constituted and privileged must be acknowledged as a great improvement upon the benefit clubs, which, under various denominations, such as sick clubs and burial clubs, have been previously existing throughout the country. The periodical meetings of these clubs were ordinarily held in public-houses, where a part of that money was spent in present enjoyment which should have gone towards a future provision against the casualties of the members. It frequently happened that these societies were got together by the landlord of the public-house in which the meetings were to be held, and that he was constituted its secretary or treasurer, keeping the funds in his own possession, or too frequently exposed to temptation. When even this evil did not arise, a temptation was held out to the members by the smallness of the contributions, which proved in the course of years wholly inadequate to answer the demands that were then sure to arise, although the income of the society had at last been sufficient to meet them. The constitution, when first established, having been sufficient for the purpose. The mischief thus felt upon them has since become old and infirm, and had no means of relieving themselves from it: this evil is now prevented by the compulsory adoption of tables prescribing such rates of contributions as it has been demonstrated to be sufficient and equitable.

The considerations by which benefit societies recommend themselves to the community were so well pointed out by the Committee of the House of Commons which sat in 1829 and 1831, that it is unnecessary to labor for this purpose to insert a short extract from its report.

' Phòng đã được ghi nhận rằng sự hostility to friendly societies has been nowhere more strong and controversial than among the patrons of savings' banks. Of these institutions your correspondent truly observes, that 'the desire of the society is not sufficiently awakened; some of which, not without the aid of a writer on friendly societies, who asks whether the advocates of a separate and exclusive saving will be easily persuaded to save their annual premium, instead of insuring their houses against fire?'

Whenever there is a contingency, the cheapest way of providing against it is by uniting with others, so that each man may subject himself to a small deprivation, in order that no man may be subjected to a great loss. He upon whom the contingency does not fall does not get his money back again, nor does he get for it any visible or tangible benefit, but he preserves the peace of mind. He upon whom the contingency does fail, gets all that whose fortune has exempted from it have lost in hard money, and is thus enabled to sustain an event which would otherwise overwhelm him.

'The individual depositors shall make the contributor to a common fund, is really a speculator. If no sickness attacks him during his years of strength and activity, and he dies before he is past labour, he is successful in his speculation; but if he fall sick at an early period, or if he live to old age, he is a great loser for his savings, with their accumulations, which will support him but a short time in sickness; or even if he retain something in old age, after having provided for his occasional illness, the annuity which he can then purchase will be to him of no use: and thus the object of the society, which he would have obtained if he had entitled himself to the benefits of the accumulated savings of all those who, having contributed for many years to a superannuation fund, have never reached an age to require it.'

The rules established by different friendly societies vary in many particulars of minor importance. The following abstract comprises most of the practical points aimed at by such institutions, and is inserted in order to afford a general idea of the principles upon which they are based.

**Rule I.** The object of this society is to assure to persons between the ages of twenty-one and fifty-five, who have become members thereof.

An allowance, not exceeding 20s. per week, during sickness, until the age of 70:

An allowance not exceeding in the whole £4 per month, from and after the ages of 55, 65, or 70, as may be previously agreed on, to continue during life.

**Rule II.** The contributions for these assurances shall be paid monthly, and shall be regulated according to the age of the members, and shall be furnished monthly to tables inserted as the end of the rules. Each member assuring an amount of 10s. per annum during sickness, shall pay in the whole £10 per annum, to entitle himself to medical attendance and medicines when needed.

**Rule III.** For all accidents, or for any other serious ill, the amount of which is given in the tables attached to these rules, which contributions shall redeem the whole of the monthly contributions which would otherwise have been payable.

**Rule IV.** In the event of the death of any member, the society shall be entitled to recover the contributions of any such member, and to pay the remainder of the contributions of the deceased to his executor or administrator.

**Rule XV.** The right to the benefits of this society shall be exempt from the penalty of this act.

**Rule XVI.** The rules for the guidance of the society, the stewards, auditors, and voluntary visitors, which it is needless to detail here.

**Rule XVII.** The annual meeting shall give security to the committee for the faithful performance of their duties.

**Rule XVIII.** Directs how special meetings may be called upon any emergency.

**Rule XIX.** Relates to the admission of members. All candidates must be recommended by two members of the society, and have enjoyed the benefit of any society, or other satisfactory proof of age, together with a certificate signed by the officers, that they are of good moral character, and of sound health of the candidate. He must also sign a declaration of the kind and amount of income, for which he intends to provide by his monthly contributions, and also of his accustomed in- and outgoings, to the rules of the society.

**Rule XX.** To XXI. prescribes the form of application, and the mode of paying the allowance during sickness, so as to guard the society, as far as possible, against fraud on the part of the members.

**Rule XXII.** Members from foreign countries shall be allowed to enter into this society, until one year after admission to the society, or until all contributions that have been paid up; and for providing for withholding the allowance until the default of these members for any reason whatsoever has been proved, or for his drunkenness, or for the member should be imprisoned under any criminal prosecution.

**Rule XXIV.** Suspends the allowance if sickness if the claimant refuses to abide by the conduct of the other officers of the society, or if he contrives to have the money paid into a public-house, be he shall delay the recovery of health.

**Rule XXV.** Provides that the sum assured at death shall be forfeited, if the member shall die by his own hand, or by the hands of justice.

**Rule XXVI.** The executors of the deceased member shall give up to the society all the stock, and he shall be liable for the value of all the goods of the deceased, or if he be not able to pay, nor does he pay, he shall be excluded from the society, and all his rights and interest therein shall be forfeited; but those members who have been excluded because of their debts, shall be readmitted if the society shall think fit, on the case of exclusion ceasing, provided their health is good, and the contributions for the last three years have been paid in time.

**Rule XXVII.** Fixes the amount of the balance that shall be payable, if the contributions of members shall not be paid, and if the society shall have made no profit; and if, in default of such, they shall cease to be members; eligible, however, to be re-elected, upon paying the default being assigned, and upon the same terms and conditions as before being paid.

**Rule XXVIII.** Fixes the last Saturday in each month for the payment of contributions to this society.
The number of friendly societies enrolled by the clerks of the peace in each county in Great Britain from the year 1829 to 1836, both inclusive, in conformity with the act passed in that year last mentioned, are as follow:

<table>
<thead>
<tr>
<th>County</th>
<th>Number of Societies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedford</td>
<td>27</td>
</tr>
<tr>
<td>Berkshire</td>
<td>15</td>
</tr>
<tr>
<td>Bucks</td>
<td>33</td>
</tr>
<tr>
<td>Cambridge</td>
<td>38</td>
</tr>
<tr>
<td>Chester</td>
<td>83</td>
</tr>
<tr>
<td>Cornwall</td>
<td>59</td>
</tr>
<tr>
<td>Cumberland</td>
<td>14</td>
</tr>
<tr>
<td>Derby</td>
<td>53</td>
</tr>
<tr>
<td>Devon</td>
<td>187</td>
</tr>
<tr>
<td>Dorset</td>
<td>53</td>
</tr>
<tr>
<td>Durham</td>
<td>57</td>
</tr>
<tr>
<td>Essex</td>
<td>59</td>
</tr>
<tr>
<td>Gloucester</td>
<td>41</td>
</tr>
<tr>
<td>Hants</td>
<td>38</td>
</tr>
<tr>
<td>Hereford</td>
<td>29</td>
</tr>
<tr>
<td>Hertford</td>
<td>20</td>
</tr>
<tr>
<td>Kent</td>
<td>87</td>
</tr>
<tr>
<td>Lancaster</td>
<td>189</td>
</tr>
<tr>
<td>Leicester</td>
<td>33</td>
</tr>
<tr>
<td>Lincoln</td>
<td>21</td>
</tr>
<tr>
<td>Middlesex</td>
<td>34</td>
</tr>
<tr>
<td>Monmouth</td>
<td>62</td>
</tr>
<tr>
<td>Norfolk</td>
<td>69</td>
</tr>
<tr>
<td>Northampton</td>
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</tr>
<tr>
<td>Northumberland</td>
<td>30</td>
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<td>Nottingham</td>
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<tr>
<td>Oxford</td>
<td>30</td>
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<tr>
<td>Rutland</td>
<td>4</td>
</tr>
<tr>
<td>Salop</td>
<td>84</td>
</tr>
<tr>
<td>Somerset</td>
<td>97</td>
</tr>
<tr>
<td>Stafford</td>
<td>180</td>
</tr>
<tr>
<td>Suffolk</td>
<td>60</td>
</tr>
<tr>
<td>Surrey</td>
<td>75</td>
</tr>
<tr>
<td>Sussex</td>
<td>36</td>
</tr>
<tr>
<td>Warwick</td>
<td>58</td>
</tr>
<tr>
<td>Wilts</td>
<td>34</td>
</tr>
<tr>
<td>Worcesters</td>
<td>68</td>
</tr>
<tr>
<td>York</td>
<td>26</td>
</tr>
</tbody>
</table>

Total of England: 2438

No friendly societies have been enrolled in Huntingdon, Westmorland, and Anglesea. The returns from Scotland comprise only those societies from which returns of sickness and mortality have been received. Of the above societies there were enrolled in England and Wales:

<table>
<thead>
<tr>
<th>Year</th>
<th>Societies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1829</td>
<td>55</td>
</tr>
<tr>
<td>1830</td>
<td>272</td>
</tr>
<tr>
<td>1831</td>
<td>400</td>
</tr>
<tr>
<td>1832</td>
<td>606</td>
</tr>
<tr>
<td>1833</td>
<td>346</td>
</tr>
<tr>
<td>1834</td>
<td>233</td>
</tr>
<tr>
<td>1835</td>
<td>416</td>
</tr>
<tr>
<td>1836</td>
<td>156</td>
</tr>
</tbody>
</table>

Ceased: 6
The above-mentioned societies do not comprise all, or nearly all, those which are in existence in Great Britain, and no similar account has been given for Ireland. According to a return printed by order of the House of Commons the number of friendly societies, the funds of which were deposited by the clerks of the peace in England and Wales, and equivalent officers in Scotland and Ireland, between the beginning of 1793 and the end of 1832, were—

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Wales</th>
<th>Scotland</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>16,596</td>
<td>709</td>
<td>2,144</td>
<td>274</td>
</tr>
</tbody>
</table>

Total in the United Kingdom 19,783

Many of the societies included in this return have ceased to exist, but it is known that there are many still in being which have not been enrolled under the act of 1829; in fact the number which have deposited their funds with savings' banks very greatly exceeds those so enrolled. The number having made these deposits, and the amount of the sums deposited by them, as they stood on the 20th of November, 1836, were as follow:

<table>
<thead>
<tr>
<th>Number of Societies.</th>
<th>Amount of Deposits</th>
<th>Average of each Society.</th>
</tr>
</thead>
<tbody>
<tr>
<td>£</td>
<td></td>
<td></td>
</tr>
<tr>
<td>England</td>
<td>4782</td>
<td>658,424</td>
</tr>
<tr>
<td>Wales</td>
<td>269</td>
<td>40,723</td>
</tr>
<tr>
<td>Scotland</td>
<td>92</td>
<td>11,321</td>
</tr>
<tr>
<td>Ireland</td>
<td>266</td>
<td>16,622</td>
</tr>
<tr>
<td>Total</td>
<td>5,409</td>
<td>727,295</td>
</tr>
</tbody>
</table>

It is to be regretted that hitherto no use has been made of the returns of sickness and mortality made under the act of 1829, of which it is understood that great numbers are deposited in the office of the Secretary of State, and with the barrier appointed to certify the rules of friendly societies. Several of these societies are composed of persons engaged in some particular calling; and if a careful analysis of the returns were made, it might, among other interesting and useful points of information, afford data for estimating the comparative healthiness of different trades, a matter hitherto very imperfectly understood or investigated.

The experience of different Life Assurance Offices has made us pretty well acquainted with the rate of mortality among the higher and middle walks of life, and the general tables of mortality, although hitherto very imperfectly kept, afford a tolerable view of the law of human life in the aggregate in this country; but it is very desirable to know as accurately as possible the experience, in regard both to sickness and mortality, of institutions, the numbers of which are taken from the working classes, since there could perhaps be no surer test discovered whereby to judge of the progress of civilization than this, which would mark the greater or smaller approximation made by the great bulk of the people following certain employments and placed in different localities, towards the substantial and necessary comforts enjoyed by the easier classes.

To supply this deficiency 'The Society for the Diffusion of Useful Knowledge' prepared various schedules, and distributed the same to friendly societies in most of the counties in England, and obtained in consequence a considerable number of returns applying to the five years that occurred between the beginning of 1823 and the end of 1827. These returns were placed in the hands of Mr. Charles Ansell, retary to the Atlas Insurance Company, who has made them the groundwork of a 'Treatise on Friendly Societies, in which the Doctrine of Interest of Money, and the Doctrine of Probability, are practically applied to the Affairs of such Societies.' It is not necessary in this place to borrow from Mr. Ansell's elaborate calculations more than the following table, which exhibits the amount of sickness and mortality that actually occurred during five years among all the friendly societies from which returns were obtained, and affords an illustration that has yet been given concerning the casualties to which the working men of England are liable. An additional column is given, deduced from the experience of the Equitable Society, drawn from the actual duration of all the lives assured by that company from 1762 to 1823, a period extending over two-thirds of a century; and this will serve to show the great discrepancies exhibited in Mr. Ansell's table, which unavoidably arise from the limited materials with which that gentleman was furnished.

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean annual quantity of Sickness, expressed in weeks and decimals of a week.</th>
<th>Annual rate of Mortality, showing out of what number one would die, according to the experience.</th>
<th>Annual rate of Mortality, showing out of what number one would die, according to the experience.</th>
<th>Mean annual quantity of Sickness, expressed in weeks and decimals of a week.</th>
<th>Annual rate of Mortality, showing out of what number one would die, according to the experience.</th>
<th>Mean annual quantity of Sickness, expressed in weeks and decimals of a week.</th>
<th>Annual rate of Mortality, showing out of what number one would die, according to the experience.</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>500</td>
<td>139.88</td>
<td>56.48</td>
<td>78.76</td>
<td>14.167</td>
<td>7.85</td>
<td>13.65</td>
</tr>
<tr>
<td>19</td>
<td>374</td>
<td>133.60</td>
<td>48.8</td>
<td>77.76</td>
<td>5.279</td>
<td>6.17</td>
<td>12.65</td>
</tr>
<tr>
<td>20</td>
<td>671</td>
<td>130.50</td>
<td>48.8</td>
<td>75.72</td>
<td>4.221</td>
<td>6.60</td>
<td>11.65</td>
</tr>
<tr>
<td>21</td>
<td>723</td>
<td>135.50</td>
<td>48.8</td>
<td>72.55</td>
<td>4.126</td>
<td>7.00</td>
<td>10.75</td>
</tr>
<tr>
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<td>780</td>
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<td>48.8</td>
<td>70.22</td>
<td>4.219</td>
<td>7.19</td>
<td>9.95</td>
</tr>
<tr>
<td>23</td>
<td>861</td>
<td>186.50</td>
<td>48.8</td>
<td>68.55</td>
<td>4.111</td>
<td>7.27</td>
<td>9.54</td>
</tr>
<tr>
<td>24</td>
<td>888</td>
<td>110.22</td>
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<td>61.98</td>
<td>3.098</td>
<td>8.33</td>
<td>8.88</td>
</tr>
<tr>
<td>25</td>
<td>950</td>
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</tr>
<tr>
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<td>11.75</td>
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</tr>
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<td>11.75</td>
</tr>
<tr>
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<td>11.75</td>
</tr>
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</tr>
<tr>
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<td>11.75</td>
</tr>
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<td>833</td>
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<td>50.24</td>
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<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
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<td>11.75</td>
</tr>
<tr>
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<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
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<td>11.75</td>
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<td>11.75</td>
</tr>
<tr>
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<td>109</td>
<td>101.17</td>
<td>3.10</td>
<td>31.77</td>
<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
<td>41</td>
<td>109</td>
<td>101.17</td>
<td>3.10</td>
<td>31.77</td>
<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
<td>42</td>
<td>109</td>
<td>101.17</td>
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<td>31.77</td>
<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
<td>43</td>
<td>109</td>
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<td>3.10</td>
<td>31.77</td>
<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
<td>44</td>
<td>109</td>
<td>101.17</td>
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<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
<tr>
<td>45</td>
<td>109</td>
<td>101.17</td>
<td>3.10</td>
<td>31.77</td>
<td>3.098</td>
<td>11.00</td>
<td>11.75</td>
</tr>
</tbody>
</table>

FRIENDS. [QUAKERS.]

FRIESLAND, or VRIESLAND, the most northerly province of the kingdom of Holland, is situated between 52° 40' and 53° 28' N. lat., and 5° 24' and 6° 46' E. long., and is bounded on the north by the North Sea, on the east by the provinces of Groningen and Drenthe, on the south
and south-east by that of Oberyssel, and on the west and south-west by the North Sea and Zuiderssee. It is sometimes called West Friesland, in order to distinguish it from East Friesland in Hanover: but it is not called by that name in Holland itself. The area of Friesland is about 1027 square miles, and the population, which was 175,554 in the year 1842, 184,446 in 1853, and 217,692 in 1858, is now estimated at about 221,000. Friesland finds its chief wealth in agriculture, which forms the basis of its industry. The soil, like that of the Zuiderssee and the Zuiderzee, which now separates them, arose. There are many parts of Friesland which, like North Holland, lie lower than the level of the sea, and are protected from the storms of the North Sea by costly artificial dykes. The whole land is flat and interposed, and the country is traversed by a network of roads forming an almost imperceptible network of canals, with winding branches, which, excepting some mounds, are here called "terpen," on which the antient Frisians were accustomed to take refuge in seasons of marine inundations. In all parts there are deep swamps and marshy bogs, between which, especially in the south and east, tracts of sand and moor, or low meadows, occasionally interpose. The canals, which are frequently higher than the land they drain (the water being pumped up into them), and have enabled human industry to bring it under cultivation, mostly join the great water main from the Zuiderzee, and lead westward, and leads through Franeker, Leeuwarden, and Dokkum to Groningen. The lowlands near the coast, particularly in the north-west, are mostly appropriated to the feeding of cattle; and the interior of the province, where the land rises to a greater elevation, is more exclusively given to the cultivation of corn. Friesland has no river of any note excepting the Lauwers, which falls into the gulf of that name, after forming the boundary in part between this province and Groningen. Of the other streams, the Baarle, Linde, Paassens, &c., the water is so brackish that it forms large and broad rivulets of inconceivable lengths. There are a multitude of small lakes, called Meeren, the majority of which have been formed by extensive diggings for turf, and are well stocked with fish. Of late years many of these lakes have been converted into common reservoirs for water pumped from the moor into vaulted tombs, or inclosures of crable and pasture land. The principal occupation of the people is breeding cattle, growing corn, fishing, and digg ing and preparing turf for fuel. The stock of cattle is about 170,000, and above 5,000,000 pounds of butter and 1,000,000 of cheese are annually exported, but the quality is inferior to that of the western provinces of Holland. There are numerous flocks, but they are of an inferior breed, and the wool is coarse. A great quantity of lambs are exported; and a considerable number of meat, some extent about the port of Leeuwarden, has a market at 30,000; they are strong limbed and stand high, and are much sought after as carriage horses. Swine are reared everywhere, and fed with a view to the production of lard rather than for meat. The agricultural produce of Friesland is immense. Haarlingen, an old town, with about 400 houses and 4500 inhabitants, a high school, botanic garden, and tile manufactories; Haarlingen, a seaport on the Zuidersee, with about 1200 houses, and a population of about 6200, 5 churches, and manufactures of sailcloth, paper, salt, &c., and a brisk foreign trade; Dokkum, a well-built town with about 600 houses and 3600 inhabitants, 2 churches, a handsome town-hall with a steeple, manufactures of beer, bran thy, salt, &c., and a brisk trade in butter and cheese. The preceding towns, as well as the islands of Ameland, and the Zuiderssee, with 26 villages, have an estimated population of about 6000 inhabitants, a town-hall, manufactures of pottery, linen, deals, oil, &c., and much trade in corn and butter; Stavenen, a sea port on the most south-westerly point of Friesland, once the residence of the Frisian kings, with a population of 2000 inhabitants; and Westerwolde, with the Zuiderzee, with about 3000 inhabitants, chiefly engaged in shipping and fisheries. In the circle of Herveenveen is the market-village of that name, and chief place of the circle, built in the midst of moors of turf, with a population of about 1200; and Landelijk a them, a village of about 5000 inhabitants.

The portion of Friesland on the west side of the Ems, commonly called West Friesland, was annexed to the United Provinces, now the kingdom of Holland, on the establishment of their independence in 1573.

FRIESLAND, EAST. [AURICH.]

FRIEZE. [CIVIL ARCHITECTURE; COLUMN.]

FRIEGATE. [SHIP.]

FRIGATE (ZooLOGY). [PELICANIDE.]

FRIGIDAE. [BIRDS.]

FRINGE TREE. The English name of the American shrub Chionanthus virginicus.

FRINGILLIDAE (ornithology), the family of Finches. This, according to Mr. Vigors, contains, in addition to the genus Fringilla [Larvulae], to which the Fringillidae are most generally referred, five other genera, and some 1100 species. The Ploceus being considered a natural genus which may be traced, in his opinion, from the point of their connexion with the Linnaean Fringilla, back, by a gradual increase of the base of the bill in breadth and height, to the family of Loxiaeae [Loxias], which unites with them at the opposite extremity of the series of families which compose the tribe. The Fringillidae, again, according to the same author, by means of the sharp-pointed and lengthened bill of Carduelis, and by the extension of the "culmen of the upper mandible in an angular form for some extent," becomes the genus Ploceus; and between this and the genera of the next group, according to Mr. Vigors, it is difficult to decide in which of these it should be placed. There is also, he states, another decided line of relationship between the two families, viz., that which some species of the Linnaean Alauda, particularly A. Capensis, near to the Sturnus ludovicianus, or Creecpeck of Mr. Latham. This latter bird is well known as the Alauda magna of Linneaus, and of the American ornithologists. But its still stronger affinity to the Sturni and Icterini necessarily places it among them. The former relationship appears to Mr. Vigors to be by no means exclusively confined to this genus, but the number of families is found in Ploceus (the Weaver Birds). [WEAVER BIRDS.] Mr. Vigors makes Fringillidae the first, and Loxiaeae the last family of the Corinoridae. Mr. Swainson makes the Fringillidae (including Loxiaeae) the last family of the Corinoridae. [Classification of Birds, vol. i., "exhibiting a most powerful structure (strength of the bill), so much as that of the Fringillidae," where the bill is short and nearly conic; both mandibles are equally thick, and when closed their height and breadth are nearly the same. A short list of the species of the genera Fringilla, Muscicapa, &c., the thickness of the bill at its base in comparison to the size of the head is enormous; but in the Loxia ostra of Vieillot, a rare
and most extraordinary bird from Western Africa, the bill is not much inferior to the size of the head. It is well known that all these 'hard-billed' birds, as the old writers aptly called them, feed entirely upon seeds and nuts; and the harder these are the stronger are the bills of such species as are appointed to derive their subsistence from such materials. Whenever an insectivorous and frugivorous diet is united, as is the case with most Tangier finches, the upper mandible is notched for the obvious purpose of more firmly securing that part of their food which can escape.

M. Lesson, in his 'Table Methodique,' places the Prim- gillidae as the third family of the Corvidae, and makes it consist of the following genera:—Emberiza of Linnaeus, Emberizoides of Temminck, Fringilla of Linnaeus, viz., Pyrgula, Fringilla, and Carduelis of Cuvier, Linaria of Blyth, Corvus of Cuvier, Corvus of Blyth, Pyrrhula of Brisson, Loxia of Brisson, Ptilastris of Tem- minck, Coryphus of Cuvier, Colius of Brisson and Linnaeus, Pheuctites of Molina, and Plocus of Cuvier.

Cuvier, in his 'Règne Animal,' arranges the Buntings (Emberiza of Linnaeus) immediately after the Tyrant (Parus of Linnaeus); and, next to the Buntings, he places the Sparrows, les Momeaux (Fringilla of Linnaeus).

Cuvier designates the Buntings as possessing an extremely distinct character in their conical, short, straight but very strong mandibles. He says:—"The upper mandible, which, the lower, has on the palate a hard and projecting tubercle; and as granivorous birds which have little caution, and readily enter the snare prepared for them. Those Buntings which have an elongated nail on the hind toe like the larks, are represented by Meyer under the generic name of Plectrophanes."

The Sparrows (Fringilla) are characterized by Cuvier as having a conical bill more or less large at its base, but not angular at the commissure. They subdivide principally on size, which is moderated by that of the bill. The Weavers (Plocus, Cuv.), a form found in both the old and the new continents. Those of the old world make a nest by interweaving very skillfully the fibres of vegetables, which serve their name. Such is the Tchown Cattle. The Philippine Isla (a Fringilla of Linnaeus), with its pendulous nest, having a vertical canal opening below, which communicates laterally with the cavity where the young are laid, and the Républicain (Loxia secta of Latham), which builds in society, and whose con-joined nests form one large continuous mass with numerous compartments. Among the Weavers of the new continent Cuvier places Le Mangere de riz, petit Choeac de Surinam, de la Jamaïque, Canario noir, &c. (Oriolo nig-er, Cuvier, and Cardinal of Linnaeus), which, in countless flocks, lay waste the fields of many of the warm parts of America. Next to the Weavers are placed the Sparrows, properly so called (Pyrgula of Cuvier), of which the well known Common, or House Sparrow (Fringilla dominicana), and the Cassin's Sparrow (Fringilla Cassini) of Cuvier are described. The companion of civilized man on a large portion of the globe, may serve as the type. Cuvier makes the Finches, les Pinsons (Fringilla of Cuvier), follow. Those have the bill rather less arched than the sparrows, and a little longer and stronger than the linnets. Their habits are more gay, and their song more varied than those of the sparrows, and the Chaffinch, le Pinson ordinaire (Fringilla coelebs of Lin- naeus), may be taken as an illustration of the genus. [CAPPING]: The Linnets and Goldfinches (les Lintéens, Lintéine, or Lintéens, and Carduelis or Car- dinales of Cuvier) come next, and the Serina, or Turkeys, Carina birds, for example. [CAYBI BIRD.] Then come the Whidah Finches, Widow Birds, as they are popularly called (Vidua of Brisson and other authors), and next to these the Budgerigars, or Budgerigars of Cuvier (psittacines and others), to which Cuvier considers there is a gradual passage from the linnets without any assignable interval, and whose completely conical bill is only distinguishable by its excessive size: of these the Common Grebeaux (Loxia Cosmoe) of Cuvier, and the Common Pitylus, to which Cuvier assigns certain foreign species, succeeds. It has, as well as Coccodraus, a large bill, which is slightly compressed, arched above, and sometimes has a salient angle in the middle of the edge of the upper mandible. The Linnets (Pitylus) may be seen in Africa, as the Pitylus, to which Cuvier assigns certain foreign species, succeeds. It has, as well as Coccodraus, a large bill, which is slightly compressed, arched above, and sometimes has a salient angle in the middle of the edge of the upper mandible.

After the Sparrows Cuvier places the Crossbills (Loxia of Brisson), and the Dureba (Coryphus of Cuvier, Strobli- sophaga of Vieillot), observing that they cannot be placed at

a distance from the bull-finsches and crossbills. The bill of Coryphus, convex all round, has its point curved above the lower mandible. Colius be considers as nearly approaching the preceding.

M. Temminck thus defines the character of the Bunting or Buntings, (Emberiza of Linnaeus), calling them, conical, compressed, trenchant, without a notch, mandibles having their edges included (the upper mandible being smaller than the lower), and a little distant from each other at the base. Nistris basal, rounded, surmounted by the frontals feathers which partially cover them. Feet with three anterior toes, and one posterior toe, the anterior toes entirely divided, and the posterior toe with a short and curved nail: in a small number of species this nail is straight and long. Wings with the first quill rather shorter than the second and third, greater alulae very well forded or slightly rounded.

It will be observed that in this generic character M. Temminck has omitted the projecting tubercle on the palate; and he gives as a reason for this omission, that it is not visible externally.

Pied, Halba, Reproduction.—The principal food of the Buntings consists of farinaceous seeds, to which insects are occasionally added. The greater number haunt woods and gardens, and build their nests in bushes. Those which have the posterior nail or claw long, live among the rocks, too: those having the posterior nail or claw short, and all the species the sexes present a marked difference, the males being variegated with lively and well defined colours. The young may be distinguished from the females, which they much resemble by their more sombre colouring, and a greater amount of pubescence. Some species moult twice, but the greater part of the foreign species do so regularly, and the colours of the males change considerably in these two molts: in the summer they are adorned with brilliant colours; in the winter they put on a more sombre hue. Those of the winter are usually smaller in size. Those of the summer a few are larger.

The same ornithologist divides the Buntings into two sections.

I. The Buntings properly so called.

These have the posterior nail short and curved, and live in the woods and gardens. They appear to moult but once a year. Some parts of their plumage which are coloured with lively tints in the summer are clouded in winter by the ashy shading with which the feathers are terminated; those colours are without mixture in the winter. Those which have the posterior nail of the middle toe partially or entirely black, till it becomes clouded with reddish after the autumnal moult. The common Yellow Hammer (Em- beriza citrinella) may be taken as an example of this sect, or, which also contains, among other species, the Orient (Emberiza hortulana of Linnaeus), Nistris of Temminck (Loxia secta of Latham) and the Grey Bunting (Emberiza Linnaeus of Linn- eus).

II. The Spur Buntings (Bruxia Eucaridina, Plectrophanes of Meyer).

This section has the back claw long and but very slightly arched. The species composing it live always on the ground in open places. Their moult is simple and ordinary, and the colours of the plumage change considerably by rubbing and the action of the air and light; but that their summer dress appears very different from that which those birds assume in the summer.

The numerous genera into which, as we have seen, the genus Aves is by his genius Gros-bec (Fringilla of Illiger). Bill short, strong, convex, straight, and completely conical; upper mandible swollen as it were, a little inclined towards the point, without any arête, and the mandible: the lower, which, often prolonged into an angle between the frontals feathers, is projected, placed near the front, behind the horny elevation of the swollen part of the bill, partially hidden by the feathers of the front. Feet with the tarsus shorter than the middle toe, and the anterior toes entirely divided. Wings short; the second or third quills graduated, the third or fourth longest. Tail varying in form.

Food, Habits, Reproduction, &c.—These birds, says M.
III. The Longicorns.

(Bill in the form of a straight cone, long and compressed; points of the two mandibles sharp.)

The Citril Finch (Fringilla Citrinella of Linnaeus) appears at the head of this section, which also comprises, among other species, the Sibinia (Fringilla spinus of Linnaeus), the Lesser Red Pole, and the Goldfinch.

In the second volume of his Classification of Birds, Mr. Swainson makes the Cocothraustine the typical group, a subfamily composed of the hawkfinches, weavers, goldfinches, and linnets. They live entirely upon trees, and have the bill very strong and entire. Genus, Cocothraustes; they are found in Pyrgita, Cocothraustes, Capito, and Coccyphilus.

M. Temminck commences this section with the Chaffinch. The Linnets also belong to it.

I. The Lapses.

(Bill large, convex, more or less swollen on the sides.)

The Grosbeak, Grosbeak or Grosbeak (Loxia coccineus of Linnaeus, Fringilla coccineus of Temminck) is placed by that author at the head of this section, which comprises, among other species, the Green Grosbeak or Greenfinch (Loxia Chloris of Linnaeus, Fringilla Chloris of Temminck) and the Common Sparrow.

II. The Brevicorns.

(Bill in the shape of a cone, more or less short, straight, and cylindrical, often conical throughout.)
FRISCHES HAFF, an inclosed area of the Baltic, lying between 54° 12' and 54° 45' N. lat. and 10° 10' and 25° 31' E. long. It belongs to the province of Eastern Prus- sia; its length from Holstein, a village at its N.E. extremity, about 42 miles W. of Königsberg, and thence towards its south-western extremity, to a village N.E. of Elbing, is about 60 miles; its mean breadth is about 11½, and its greatest about 18½ miles; and it occupies an area of about 310 square miles. It is separated from the Baltic by a narrow tongue of land or sandbank called the Frischo Nehrung, on which are the hamlets of Neuburg, Kaliberg, and Preblhnenau, and at the north-eastern extremity of which, opposite to Pillau, there is a narrow strait, 12 feet deep and 3000 feet wide, called the Gatt. This passage was formed by an inundation of the waters of the Haff in the year 1510. In consequence of the shallowness of water in the Frisch Haff, particularly in summer, no large vessels can navigate it, and Pillau is therefore the port both of Königsberg and Elbing. Among the numerous streams which find an outlet in this Haff, are the Pregel, Frische, Passarge, Bunde, and two arms of the Vistula, of which the most southern, quitting the main channel of that river, takes the name of the Nogath and flows past Elbing. The towns of Fischhausen, Brandenburg, Franchenburg, and Tolkmint, are on the northern and western banks of the Haff.

FRISCHLIN, NICODEMUS, born in 1547, was the son of a Protestant clergyman in the duchy of Wurttemberg. He showed at an early age a great aptitude for the study of languages, became an accomplished scholar, and was made professor of the arts at Tubingen University, where he wrote Paraphrases of Virgil's Bucolics and Georgics, and of Persius, as well as a great quantity of original poetry, and several dramas, for one of which, entitled 'Rebecca,' he was crowned with a gold laurel crown by the Emperor Rudolph. He was an able and prolific writer, and of Puritan sentiments. But his satirical humour made him enemies, and being charged with adultery, he was obliged to leave Tubingen. After visiting several towns of Germany, he at last settled at Mayence, where he published some of his works. In 1578 he went to Italy. On the death of his father, in that country, he wrote his famous Epistolae, wherein he declared himself to be an enemy of the Pope. The partiality of his countrymen excited the enmity of the emperor, who confined him and shut up in a tower, from whence he attempted to escape, but failed in so doing from a great height, and died of the fall in November, 1599, being 43 years of age. He wrote a great number of works, the principal of which are:—1. 'De Astronomiae Artis ensis, ex Officinis Celestii et Naturali Philosphiae convenientia,' 2. 'Institutiones Oratoriae; 3. Several Orations; 4. A work on education entitled 'De Ratione institut. Puerorum et animarum adolescentium ad hominum accipientis.' 5. 'Dialogus Logici contra P. Rami Sophisticum pro Aristotele, and other treatises against the schoolmen; Facie Selectores, many of them licentiates; 7. 'Questionum Graecarum, libri octo.' 8. In Tryphodoro; Egypti Grammatikeri. 9. 'Isagogon, inter alia, et textuum Grucum; 9. 'Notes on Callimachus.' 10. 'Aristophanes repurgatus a mendis et interpretatus.' 11. In ebreutismo Carmina; and a quantity of verses, elegies, satires, epigrams, besides the dramas and the paraphrases of classic authors above mentioned. (Teissier, Loges des Hommes Savans; Moreri's Dictionnary, art. 'Friscelin.')

FRISIANS, a people of Germany, who formed part of the eastern Baltic people, and have been in part derived from the low German word 'freyen,' to shake or tremble, in allusion to the nature of their country, the soil of which is an unstable or shaking moor. They were divided into Frisi Minoros, who inhabited the lands north of the Ems, the old Frisians or Batavi—the name of which has been since adopted by the people of the islands, the so-called Oestersiel, Gelders, and Utrecht, and the greater part of the province of Holland, inclusive of the Ziidersee, which at that time was mostly dry land; and the Frisi Majoros, who inhabited the land between the Yssel, Ems, and the country of Stade, and the tributaries of the Ems, the provinces of West Phalmark, Groningen, and the old Rhine separated them from the Batavi, and the Ems from the Chauwe. According to Tacitus (Ann. ii. c. 24) they were the most steadfast allies whom the Romans possessed in this quarter; they aided Domitian in his expedition against the Cherusci, and saved the Roman fleet from destruction at the mouth of the Ems. But this state of animosity was broken off upon the Romans making an attempt to treat them as subjects; they thereupon, when they were acknowledged as the allies of Rome, and roused, with one exception, all her strongholds in these parts, having in the 28th year a.p., when Oeniromus was the Roman lieutenant, turned upon the Romans, slain about 900 of them near the woods of Badu- ma, and from the same spot they were destroyed. (Tacit. Ann. iv. c. 72, 73.) Corbulon, the Roman general under Claudius, a.d. 47, reduced them to obedience, and Nero drove them out of some districts on this side of the Zuidersee, which they had invaded. (Theol. Ann. xii. 3.)

The Frisian language is said to have been adopted as a mother tongue in these parts of Germany, in the 9th and 10th centuries, when they appear as members of the great confederation of the Saxons, no mention of them occurs. We find them at this time holding the sea-costs from the Schelde to the Eibe and Eyerz, whence it has been conjectured they have derived their name. The reason why this language, the mystery between these chieftains, who called themselves Frisians, was, that count Edzard prevailed, and established himself in that part called East Friesland in 1458. In 1657 Count Enno acknowledged it as a fief of the empire under the emperor Ferdinand, and was raised to the dignity of a sovereign prince; but both his power and that of his descendants was jealously limited by the national states. The last prince died in 1744, and by virtue of an imperial grant in 1568, Prussia took possession of East Friesland, and was wrested from her in 1862, and transferred to Hol- land; in 1810 it became a province of the French empire; in 1813 Prussia recovered it, and in 1815 she ceded it to Hanover.

The western part of the Frisian territory, or West Friesland, is called the province of the kingdom of the Frisians. The ancient Frisians resembled the Germans in their habits and mode of living, and according to Tacitus, the only tribute they could afford to pay the Romans consisted of skins. They were governed by two princes, whose sovereignty was, on account of the extent of their dominions, divided among their posterity. The Frisians are settled among the small islands on the western coast of the duchy of Schleswig, and preserve not only the name of Frisians, but many vestiges of their customs and dress. They wander in a leisured livelihood to Holland and the southern provinces, and return home with the produce of their labours. (Tacit. Ann. ii. 24.)
chain of the Alps does not approach so near the sea as on the western frontiers of Genoa, and the main ridge of Julian Alps turns off to the eastward a considerable distance inland. But the Ionian coast faces the Ionian, and those of the Slave. The valley of the Isonzo, the valley of the Tagliamento, and the southern part of the Crimean peninsula, produced abundant corn and very good wine, while the northern part is hilly and affords excellent pasture and plenty of game. The climate is healthy, the inhabitants are robust and spirited, and were considered as very hospitable. The language is Latin, and that dialect is known by the name of the Venetian, on the borders however German and Slavonian are spoken. (Da Porto, Lettere Storiche dell'anno 1509 al 1512; lettera xx. descrizione della Patria del Friuli.) For a further description of the town of Udine, see Biogr. Italia, vol. iii. p. 387. All persons of note in Friuli, who wrote his epitaph in Greek and Latin. Both these epistles are at the end of his epistle.

A large number of valuable authors were printed by Froben; and among them the most important was St. Jerome. The works of St. Jerome, 5 vols. folio, 1516, reprinted in 1520 and 1524; those of St. Cyril, fol. 1521; Tertullian, fol. 1521, reprinted in 1525; the works of Hilary, bishop of Poitiers, fol. 1523, reprinted in 1526; St. Ambrose, fol. 1527; and the works of St. Gregory the Great, fol. 1528. Froben formed a design to print the Greek Fathers, which had not then been done; but death prevented him. That work, however, was carried on by his son Jerone Frobenius, and his son-in-law Nicholas Bischof, or Erasmus, who was patronized by Froben, for his learning in partnership in the business with the same reputation, and gave very correct editions of those fathers. (Chalmers' Biogr. Diet. vol. xv. p. 137; Biogr. Universelle, tom. xvi. p. 58; Jortin's Life of Erasmus, vol. i. p. 435; Erasmi Epit., fol. Lugd. Bat. 1706, pp. 922—927.)

FROBISHER, SIR MARTIN, an enterprising English navigator, who, as Stow informs us, was born at Doneseter, in Yorkshire, of parents in humble life, but it is not known in what year. Being brought up to the sea, he very early displayed the talents of a sailor, and other mercantile pursuits. He had a sufficient number of adventurers, and collected such sums of money as enabled him to fit himself out for his voyage. The ships which he provided were only three; namely, two of about twenty-five tons each, called the Maladven and the Michael, and a larger vessel, the Matthew. With these he sailed from Deptford, June 6th, 1576: and the court being then at Greenwich, the queen beheld them as they passed by, 'commended them, and bade them farewell, with shaking her hand at them out of the window. Bending to come northward, they came on the 26th within sight of Faro, one
of the islands of Shetland; and on the 11th July discovered Friesland, bearing W.N.W., which stood high, and was covered with snow. They could not land by reason of the heavy snow and the small number of vessels employed. The north point of this island Capt. Frobisher named "Queen Elizabeth's Foreland." On the 28th they had sight of Mota Incognita, being part of New Greenland, on which also they could not land, for the reasons just mentioned. Aug. 10th Frobisher took possession of these parts, but stayed there only a few hours. The next day he proceeded into a strait which he called, and it still retains the name of Frobisher's Strait. On the 12th, sailing to Gabriel's island, they came to a sound, which they named Prior's Sound, and after a very dangerous voyage made their way to Prior's bay; the 17th to Thomas Williams's island, and the 18th came to anchor before Burcher's island. Here they went on shore, and had some communication with the natives, by whose treachery they lost a boat and five of their men. Frobisher having endeavoured in vain to recover his men, set sail again for England the 26th August; came again within sight of Friesland 1st September; and notwithstanding a terrible storm on the 7th of the same month, he arrived at Harwich on the 2nd of October.

Frobisher took possession of the country he had landed upon in the name of Queen Elizabeth's, and, in token of such possession, ordered his men to bring to him whatever they could first find. One among the rest bought a piece of black stone, in appearance like soap-coal, but very heavy. He supposed it was bitumen, and gave it to the queen. The wife of one of the adventurers threw a fragment into the fire, which being taken out again, and quenched in vinegar, glittered like gold; and being tried by some receivers in London, was found to contain a portion of that rare metal. The success of the voyage, and the possession of such quantities of gold, great numbers of persons earnestly pressed, and soon fitted out Capt. Frobisher for a second voyage, to be undertaken in the following spring. The queen lent him a ship of the royal navy, of two hundred tons, with which, and two small barks, of about thirty tons each, he sailed down to Gravesend, May 26th, 1577, where the minister of the parish came aboard the greater ship, the Aid, and administered the sacrament to the company. Two days after they reached Harwich, whence they sailed on the 31st May, and arrived at the port of Genoa, Aug. 5th, where they purchased victuals, minerals, &c., which accompanied the expedition, was a hundred and forty, furnished with victuals and all other necessary provisions for seven months. They arrived in St. Magnus Sound, at the Orkney islands, upon the 7th of June, where, after being on shore for some days, without seeing land. They met, however, with great drifts of wood, and whole bodies of trees, which they imagined to come from the coast of Newfoundland. On the 4th of July they discovered Friesland, along the coasts of which they discovered a great deal of ice, which they supposed to consist of snow, being seventy or eighty fathoms under water, and more than half a mile in circuit. Not having been able safely to land in this place, they proceeded to Frobisher's Strait; and on the 17th of the same month made the north foreland in it, otherwise called Hall's island, as also a smaller island of the same name, where they had in their previous voyage found the ore, but could not now get a piece as large as a walnut. They met with some of it, however, in other adjacent islands. On the 19th they went upon Hall's island, and near the shore of the inhabitants, with some of whom they trafficked, and took one of them, neither in a very just nor handsome manner; and upon a hill here they erected a column of stones, which they called Mount Warwick. They now sailed about, to make what discoveries they could, and gave names to different bays and islands; as Jackman's Sound, Smith's Island, Bear's Sound, Leicester's Isle, York's Sound, Ann of Warwick's Sound and Island, &c.

Frobisher's instructions for this voyage were principally to search for a passage to China. He was directed to leave the further discovery of the North-west passage till another time. Having therefore in the counties of Warwick's island found a good quantity, he took a lading of it. He sailed the 23rd of August, and arrived in England about the 15th of October. He went at once to the court, and was received by the queen; and as the gold ore he brought had an appearance of riches and profit, and the hope of a North-west passage to China was greatly increased by this second voyage, her majesty appointed commissioners to make trial of the ore, and examine thoroughly into the whole affair. The commissioners did so, and reported the great value of the undertaking, and the expediency of farther carrying on the search; but it was delayed on account of the preparations that were to be made to undertake it; and the mines newly found were sufficient to defray the adventurers' charges, it was thought necessary to send a select number of soldiers, to secure the places already discovered, and to make preparations for the commence of the expedition. But before the plans were executed, the Duke of Medina Sidonia, new viceroy of the Indies, was despatched to China, and to search again for the passage to the Indies. Besides these ships, as before, twelve others were fitted out for this voyage, which were to return at the end of the following summer, with a lading of gold ore. They assembled at Harwich, and in March, 1583, they sailed under the 26th June, when Frobisher, who was now called lieutenant-general, took possession of the country in the name of England, and published the name of Chasing Cross one of the high cliffs. On July 4th, they came into the mouth of Frobisher's Strait, but being obstructed by the ice, which sank one of their barks, and driven out to sea by a storm, they were so unfortunate as not to hit the entrance of it again. Instead of which, being deceived by a current from the north-east, and remaining twenty days in a continual fog, they ran sixty leagues into other unknown straits before they discovered their mistake. Frobisher, however, coming back again, made for the strait which bore his name; and on the 23rd July, at a place called the monastery, they found the 3rd and 4th of his fleet. On the 31st of the same month, he recovered his long-desired port, and came to anchor in the Countess of Warwick's Sound; but the season of the year being too advanced to undertake discoveries, after getting as much as he could, his vessels were directed to point the way to the Spanish coast. In 1594 he was sent, with four men-of-war, to the assistance of Henry IV. of France, against a body of the leaguers and Spaniards, then in possession of part of Brittany, who had fortified themselves very strongly at Amboise. He was master of twenty vessels, and on Nov. 7th, was wounded by a ball in the hip, of which he died soon after he had brought the fleet safely back to Plymouth, and was buried in that town. So says, the wound was not mortal in itself, but became so through the negligence of the surgeons, who had been too long without duly searching the wound, and taking out the wadding, which caused it to fester. (Hakluyt's Collect. of Voyages, vol. iii. pp. 29, 32, 39; Stow's Annals, edit. 1631, p. 109; Boyer, Brit. vol. iii. p. 2044.) There is a good portrait of Sir Martin Frobisher in a picture gallery at Oxford; and many of his letters and papers, with others relating to him, are preserved in the Cottonian and Harleian collections of manuscripts in the British Museum. The instructions given to him for the voyage of 1577 are printed in the Mercurius Aethiopicus, by Hans Sloane's MSS. His last letter, reporting the taking of the fort of Croydon, dated Nov. 8th, 1594, is preserved in the Cottonian MS, Calig. E. ix. fol. 211. A Latin translation of the account of his voyage of 1577, under the title of Historia Navigationis Martinii Frobisharii, by Job. Freigius, was published at Hamburg, in 4to. 1675.

FROSHAM. [Cheshire.]

FROGS. FROGS-TRIBE. Terms applied by zoologists to a natural section of the Batracians, Cuvier's fourth order of Amphibia.

The Batracians differ essentially from the other three orders, viz.: Chelonia or Tortoises, Saurians or Lizards, and Ophidians or Serpents. They have no ribs, or rudiments of ribs only. Their skin is naked, being without scales; their feet are moderate, and there is consequently no introisome colitis. In the Frog-tribe the eyes are found on their exclusion from the body of the female: they are shallow and generally laid in the water. The young, when hatched, breathe by means of...
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branchial or gills, very much after the manner of fishes, being in their early stage of growth quite unlike their parents, and, in that state, forming a natural passage to the last-named class of animals. These branchia disappear as the higher Batrachians proceed towards maturity, and the order has therefore been named the Caudatebranchiate Amphibia, which have been divided into, 1st, the Anurous or Tailless Batrachians, having no tails except in their young state, including the frogs and toads; and 2nd, the Urodèles or Tailed Batrachians, such as the Salamanders [Salamandra]. The first-named branch will form the subject of the present article; and, among these animals, the transformations of the young (which undergo a complete metamorphosis in the greater part of their organs, and an entire change in their habits and mode of life) are most distinctly manifested.

**Organization.**

Skeleton.—The skull, in the reptiles, generally, is made up of the same parts nearly, as that of the mammiferous animals, though the proportions are different. But the lower Batrachians, which approach the fishes in this particular, have not the internal cavity corresponding so completely with the surface of the ephiphenon as the other reptiles. The skull is very much flattened; and small as the cerebral cavity is, it is by no means filled with the brain. It is narrower and more elongated in the species which pass their whole lives in the water than it is in the Anurous Batrachians or True Frogs.

The vertebral column commences at the posterior part of the head, and, unlike the rest of the reptiles, the Batrachians, like the Rays, the sharks, and the mammiferous animals, possess two condyloes situated on the sides of the vertebral hole. In the tadpole the vertebrae are of the same calibre throughout, but a difference takes place when the limbs are developed. At this period, the vertebral canal diminishes in diameter, and no trace of the canal is left in the elongated occyces. It is in the tailless Batrachians that the vertebral column is shortest, for the frogs have only ten and the pipas but eight vertebrae.

As a general rule, the anterior extremities are shorter than the posterior limbs; but in some of the frogs, especially, the lower extremities are twice or three as long as the anterior feet, as might be expected in animals whose progression is principally effected by leaps. Ribs there are none; but the sternum is highly developed and a large portion is very often cartilaginous. It receives anteriorly, or in its mesial portion, the two clavicles and two coracoids which fit on to the scapula. The whole makes a sort of band which sustains the anterior extremities, and an elongated disk which forms a support for the throat, and assists in the offices of deglutition and respiration. Another disk extending backwards, being for the insertion of the rectus muscles, protects the abdominal viscera in some species. The pelvis is well developed in the frogs, especially in the Pipa, and though apparently deprived of all traces of a tail after undergoing their last transformation, there remains, internally, a true coccygeal piece, most frequently even movable, and elongated, but without anything like vertebral form.

The bone of the arm or humerus is single, and is long in proportion to those of the fore-arm, which are united throughout their length, their duality being manifested by a simple furrow or depression. These bones are distinct in the reptiles generally, and the radius is generally rather the longest; the ulna is prolonged backwards into a kind of olecranon, and sometimes this apophysis is distinct, and becomes a sort of sesamoid-bone in the thick part of the tendon of the extensor muscles. The 'pipas,' the tortoises, and the greater part of the saurians have this conformation. The bones of the corpus or Wrist exhibit nothing extraordinary in their structure; nor do those of the fingers, which are without nails or claws, require particular notice.

The bones of the well-developed pelvis present considerable differences in the various genera of Anurous Batrachians. Thus in the Frogs (Rana) and the Tree Frogs (Hyla), the osa stili are very much elongated, articulated in a movable manner on the sacrum, and very much approximated below towards the cotyloid cavity; so that the two heads of the thigh-bones seem to be placed in contact, a conformation which much influences the action of the posterior limbs upon the trunk in the execution of the motions of swimming and leaping. In the Pipa, or Surinam Toad, the osa stili are very much widened at the point of junction with the sacrum, which is, itself, dilated, forming a strong union by means of a true synphysis. The femur, or thigh-bone, is very much elongated, and slightly curved in the form of the letter S in the Frogs (Rana), and in the Tree Frogs (Hyla); it is a little shorter in the Toads (Bufo), and is flattened in the Pipa. The bones of the leg (tibia and fibula) are, in the Reptiles, generally distinct; but in the Anurous Batrachians, Rana, Hyla, and Pipa, for instance, they are so welded together as to form but a single articulation, with the femur and tarsus, and present the appearance of a single very much elongated bone, which some have erroneously considered as a supernumerary bone, or second femur. The knee-joint and articulating bones are so disposed that the feet have always a direction outwards. In the Reptiles, generally, the posterior feet are more developed than the anterior limbs; and this modification is particularly observable in the Anurous Batrachians, which have the tarsus so much elongated as to induce some to consider the first bones composing it to be a fibula or tibia. The bones of the metatarsus correspond to the number of toes.

![Skeleton of the Common Frog](image-url)

The *Arbola* (see the title) is an example of the *Pteronemarchia Amphibia.*
Muscular system, particularly as relating to locomotion.

The muscles destined to give activity to the framework, examples of which are given above, are, like those of all the Reptiles, remarkable for their irritability. There are not wanting zoologists who have seen Toads, Salamanders, Turtles, and Serpents, deprived of their heads and skins, but kept moist, display muscular motion for whole weeks. In the Anuranous Batrachians, the Frogs especially, the muscles of the upper and lower extremities, are more developed than in the other Reptiles, offering in this particular some analogy to the abdominal structure of the Mammifers. But it is in the disposition of the muscles of the thigh and leg in the Frogs and other Anuranous Batrachians, that the greatest singularity is manifested. These, whether taken conjointly or singly, present the greatest analogy with the muscular arrangement of the same parts in Man. We find the rounded, elongated, conical thigh, the knee extending itself in the same direction with the thigh-bone, and a well-fashioned calf to the leg, formed by the belly of the gastrocnemius muscles. It is impossible to watch the horizontal motions of a frog in the water, as it is impelled by those muscles and its webbed feet, without being struck with the complete resemblance in this portion of its frame to human conformation, and the almost perfect identity of the movements of its lower extremities with those of a man making the same efforts in the same situation.

We have seen that the ribs are absent in the Anuranous Batrachians, and the functions of respiration, as well as those of deglutition, being carried on by means of particular muscles, as we shall presently have to notice, those bones would have been more inerences. In the Frogs, the muscles are not attached to the skin, which envelopes the whole muscular arrangement in a sort of insulated, insensible, moveable bag; in the Urodèles, on the contrary, the integuments serve as the point of insertion to almost all the active organs of motion.

The locomotion of the Anuranous Batrachians on land consists in walking, running, and leaping, in its various modifications; the latter being the motion most prevalent. The greater part of them are excellent swimmers; and when they betake themselves to this exercise, the body is extended horizontally, and the animal is propelled by the mechanism of the lower extremities alone, a mechnism admirably adapted to this mode of progression, as well to the other varieties of movement which the necessities of the animal require. By the aid of these well-developed lower limbs, and the prodigious power of their muscular and bony levers, a frog can raise twenty times its own height, and traverse, at a single bound, a space more than fifty times the length of its own body.

Digestive Organs.—The Anuranous Batrachians, in their adult state, are, like the greater part of the existing Reptiles, carnivorous, and swallow their living prey without mastication. The mouth in many of them is very wide; so wide, indeed, in some (the large Frogs and) Batrachians, as to admit of their swallowing vertebrated animals; but insects, annelids, and small mollusks form the chief of their food. They have no true fleshly lips, nor indeed have any of the Reptiles; but the freshwater tortoises are furnished with a cleft of jaws or two clefts for when biting jaws, and perhaps as a more complete apparatus for shutting the mouth. The same conformation is observable in the greater number of the tadpoles of the Batrachians, the larger portion of which, in their adult state, have the lower jaw received under a soft skin which covers and edges the mandible. The branches of the lower maxillary bone are rarely soldered at the symphysis, and sometimes, as in the genera *Rana* and *Hyla*, there is, at the point of junction, a mere cartilage which admits of a certain amount of motion. In the Frogs and the Urodèles, the number of pieces composing each of the branches amounts to three. One of these pieces corresponds with the symphysis, and is armed with teeth, the second serves for articulation, and the third is situated backwards, and prolonged below. On the palate of many of the Anuranous Batrachians are certain processes which may be termed teeth; but these are pointed, and not tubercular, as the old error of naming some of the teeth of fossil fishes *Byfornites* might lead us to suppose. These palatal teeth form a part of the bones to which they are attached, as in the case of fishes.

The tongue performs a leading part in the capture and deglutition of the prey. In the greater portion of the Anuranous Batrachians the structure of this organ is altogether anomalous, and its insertion is equally at variance with the mode adopted in the other vertebrated animals. It is very soft, fleshy almost throughout, and is not supported at its base by an os *hyoideus*. Its attachment is the reverse of that generally seen, for it is fixed in the concavity which is formed by the appreoch of the two branches of the lower jaw towards the symphysis. In a state of repose, and when the mouth is shut, this tongue, which has its root, so to speak, in the interior edge of the anterior part of the lower jaw, lies its free extremity in the back part of the mouth and before the aperture of the air passages; but when the animal puts it forth, it is considerably elongated and thrown sharply out of the mouth, as if by an effort of expulsion. The end reaches a considerable distance, as, turning on the pivot of its anterior fixures, it is reversed in such a manner that the surface which was below when the tongue was in the mouth, and in a state of repose, is, when...
it is thrown out, above; and, when the tongue is returned into the mouth, the surface, which was an instant before above, resumes its original position, and is again beneath. The organ is armed with a tenacious viscous secretion; and when it touches the prey, the latter adheres so firmly to it, that it is not only carried with the stay the fish, but the gut.

There it is, in most cases, compressed, involved again in a glutinous sort of saliva, and almost instantly submitted to the act of deglutition. The motion of throwing out and returning the tongue is often performed with a rapidity which the eye can hardly follow. If any one will observe a toad in a melon-frame, he will see the ants or other insects which come within shot of its tongue disappear; but his vision must be very acute and prompt to detect the action of the tongue. The muscles, whose office it is to move the bones of the face, are more perfectly adapted to this function, especially upon the lower jaw, upon the bone of the mandible, and upon the tongue, which, after being shot forth, as we have endeavoured to describe, is returned and swallowed, as it were, with the captured prey, and the act of deglutition is continued till the food is lodged in the stomach.

The pharynx in mammiferous animals consists of that backward cavity of the throat into which the lower orifices of the nostrils, the orifice of the mouth, the canal of the ear, the esophagus and the oesophagus open; but in the Batrachia there cannot be said to be any true pharynx, for the nostrils, as well as the glottis, open into the mouth, the esophagus commences immediately behind the nostrils, and the muscles that act more especially upon these parts and upon the lower branchial organ, with which we shall presently see that these same muscles are also put in requisition to force the air necessary for respiration into the glottis and trachea, in order to supply the cavity of the lungs. The stomach of the Anuran Batrachians does not require for its digestion the aid of teeth; as it is well armed, and a more carnivorous an animal is, the shorter and the less flexible is its intestinal canal, is well illustrated in that tribe. The tadpole, which lives upon vegetation, possesses an extremely long digestive tube; but in its perfect state, and in that of its metamorphosis, the intestines become very much shortened, losing four-fifths of the length which distinguished them when the animal was in its early stage of existence. The vent in the Anurans is rounded and wrinkled. The liver generally consists of three lobes, and the gall-bladder adheres to and is hidden in the concavity of the liver, very high up. The spleen in the frog and toad is rounded, not of large dimensions, and situated in the mesial region, under the liver and the oesophagus open; but in the Batrachians, the pancreas, and the chyliferous veins may be distinctly traced. Thus far we have endeavoured to give a mere outline of the digestive organs in the Anuran Batrachians, in their perfect state; but these organs, as might be expected, vary considerably in this or that particular animal, as a mouth furnished with lips, and horny cutting processes, that act as jaws in the division of the vegetable food which forms their principal nourishment, and their intestinal canal is coiled spirally within their large rounded abdominal organs. The metamorphosis is complete, internally as well as externally, when this armed little mouth is changed into the widely-opening gape, which reaches beyond the eyes, and the animal swallows its living prey entire. In this their last stage, they can endure a long abstinence; they grow slower, and the esophagus is more, or it may be, the only aliment, which edges their jaws is soft, and forms a sort of gum or external lip; their under-jaw is received into a kind of rim or groove, which runs along the upper-jaw, and its two lateral lobes are slightly moved towards the symphysis; this junction of the jaws is so complete as to shut up the well-fitted lid of a snuff-box. The tongue, as we have seen, adheres in the adults to the anterior part of the gums; but this must be taken as a general rule, to which there is, as in the other classes, some exceptions. When the tadpole has no externally visible ear-drum, the tongue is fastened to the back of the mouth; and in Pipa, the tongue is wanting.

The oesophagus is a larger tube than canal, with longitudinal folds, and may be considered as the kind of crop or first stomach; and the intestinal canal is hardly 1/2 the length of the whole body, whilst in the tadpole it is more than seven times as long. We must not omit to notice here the remarkable folds of the peritoneum, in the thickness of which folds a fatty matter is either deposited or secreted, generally of a yellow colour, and varying much with regard to its disposition in the different species. The use of this substance is supposed to be a provision for the support of the animal during the period of its lethargic hypostasis in the cold months.

In the museum of the Royal College of Surgeons, there is a preparation (No. 669, Gallery, Physiological Series), showing a portion of the small and great intestine of a frog (Rana temporaria of Linnæus), injected, exhibiting the peculiar reflected course of the former, and its oblique termination in the latter, which is suddenly diluted.

Circulating System.—The circulation in the Anuran Batrachians varies with the different metamorphoses which the animal undergoes. In the early or tadpole stage, the blood is conveyed to the branchial organs by the arterial trunk, which leaves the heart near the valves, with a sort of bulb, or contractile swelling. This artery, which contains the black or venous blood, is divided into two trunks, one directed to the right, the other to the left, and these are then subdivided into two, three, or four trunks, according to the number of the branchial leaves: on their arrival there, they insulate with the venous trunks, and by that time the blood has assumed its arterial quality and colour. These arterial trunks unite successively, so as to form, by means of two principal trunks, the aorta, which is directed to the head, and the arteria perforata, at the point of its formation, placed near the heart, to which it gives off many branches, and continues to descend down the vertebral column.

It is when the period of metamorphosis arrives, and when the animal which had been breathing by means of gills is to respire through the medium of lungs, an entire and necessary change takes place. In proportion as the branchiae of the tadpole are destroyed and absorbed, the caliber of the arteries, veins, arteries, which were distributed to the branchial trunks, diminishes gradually, till they are at last entirely obliterated. The first of these vessels then develops itself, and receives on each side the whole of the blood, giving off three principal trunks, one for the head, corresponding to the carotid artery,—two for the trunk, which is bifurcated at the base of the head, and the longest of all, for the cellular lung, which is of considerable volume. The rest of the principal trunk follows the mesial line, and unites with its congener, so as to form a true artery for the supply of the viscera and lower extremities, which acquire their large dimensions at this period.

Respiratory System and Vocal Organs.—The absence of the ribs prevents any application of costal influence upon the respiratory organs of the Anuran Batrachians, as is the case with the mammiferous animals, but though their form, as well as the medium in which they live, is so totally different in the early and late part of their life, the principal of action on these organs is nearly the same. The young may be said to swallow water, or at least to receive it into the mouth, as the adult animal does; but as their lungs are not sufficiently developed to serve for complete respiration. But in the Frogs and other Anuran Batrachians, the function of respiration is performed by means of the gills, which soon cover the eye, and are supplied with valves. When in the cavity of the mouth, which is well closed on all sides, with the exception of the throat, where there are present the branchial slits, the water, acted upon by the muscles which cover them, traverses these

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spaces, and lathers the branchial before its exit through the branchial holes. The blood which is pushed into these branchies thus distributed, as it is in the fishes, and passes, as we have seen, from the arterial vessels into the gills to form the blood.

On acquiring their perfect form, and when the obliteration of certain points, and the development of the others, has adapted the Anomuran Battrichs for breathing air, by means of its two large lungs, the peculiar culm and diverging branches, which multiply the surfaces of the lungs, and by the vascular channels which connect the branchies and the arteries and veins of the body, the Bull-frog is the shrill trubles of the species of Illyurus, of the males especially; the flute-like and metallic sounds occasionally given out, and the sort of seemingly ventriloquial grumbling which some species of Toads emit, are all natural effects of the lungs and their apertures.

As connected with the phenomena of breathing, it must not be forgotten that the naked skin of the Frogs, and toads, is covered with minute respiratory organs, by means of which air is taken upon the air in such a way as to fuel, in a great degree, the functions of the lungs, and that aerated water may be made subservient to this cutaneous respiration. The experiments made on Frogs which have been kept in deep water, have shown that, when kept in time and on Toads which have been kept alive for months in nets sunk under running water, at a low temperature, without any direct access to atmospheric air, prove the

These powers, the faculty of inhaling long absinence, their hyperventilation, and the age to which the Anomuran Battrichs are said to attain, naturally lead us to the consideration of the stories told of the discovery of toads, antediluvian toads, for which they were once called, inclosed in solid rocks, or found in the bottoms of great lakes. No. 1103 was exposed to have existed for centuries, deprived of the possibility of access to either food or air; though, when found, they were alive and vigorous. Nor do these stories rest solely on the doubtful hearsay evidence of uneducated persons, for even the most specious arguments in the world, and alludes to the account in the 'Memoirs of the Academy of Sciences' for the year 1719, of a toad found alive and healthy in the heart of an old elm; and of another discovered in the year 1721, near Nant, in the heart of an old oak, without any visible entrance to its habitation. From the size of the tree, it was concluded that the animal must have been confined in that situation at least eighty or a hundred years. He adds, that, in the many examples of toads found in solid rocks, exact impressions of their bodies,surrounded by a white or yellowish substance of a similar kind, was found in stones or trees from which they were dislodged; and he asserts that it was said that there existed, when he wrote, a marble chimney-piece at Chatsworth with a print of a toad in it; and that there was a traditionary account of the same, and he thought it due to him to publish these. These and similar facts, adds the author last above quoted, are supported by authorities so numerous and respectable, that it is unnecessary to quote them. Many abortive attempts have been made to account for this appearance of natural animals and living bodies, as of a fossil nature, since the time of Mr. Mason. Here we have an instance, and there are many, of an animal which has been found dead, and living, in the state here described, without the possibility of receiving nourishment or air; especially as, like all other animals, when put into an exhausted receiver, the toad so long loses its existence. Upon this subject I shall only hazard two observations. The first is, that where it is possible to a dull place, can live several months without food, of any kind; though, in its state of natural liberty, it devours voraciously spiders, maggots, ants, and other insects. We have here an instance, and there are many, of an animal which has been found dead, and living, in the state here described, without the possibility of receiving nourishment or air; especially as, like all other animals, when put into an exhausted receiver, the toad so long loses its existence. Upon this subject I shall only hazard two observations. The first is, that where it is possible to
amining every circumstance with the discerning eye of a philosopher. In rocks there are many chinks as well as fissures, both horizontal and perpendicular; and in old trees the wood is more frequent than holes and vacuities of different dimensions. The eggs of toads may accidentally be conveyed by water, the penetration of which few substances are capable of resisting. After the eggs are hatched, the animals may reappear in small and small portions of air through the crevices of rocks, or through the water; and the truth upon a subject of so rare a nature, and mysterious; for the vulgar, even to the tender uncles appearances still more marvellous, are not to be trusted.

Upon the above observations it will only be necessary to remark that the general impression on the mind of the writer seems to have been, that he has discovered a fact whilst the reasoning which he puts forth in its favour is, to say the least, very vulnerable, and in some points at variance with itself. It is difficult, indeed, to assign limits to suspended animation, but it is very improbable that where, as we have seen, it is probable that nature has made a provision for the ordinary period of hybernation, the animal should continue to exist for many years after the supply must have become exhausted. The theory of the conveyance of the air to the future generation of the creature is, in probability will be manifest to those who will consider for a moment the mode of reproduction, and the metamorphoses which the creature undergoes. With regard to positive assertion, we could adduce many instances to show the careless way in which people—aye, even well-educated people—will relate as facts those appearances which they think they have seen. We once heard a person, of no mean attainment in one branch of Natural Philosophy, but no zoologist, give an account of a zoological phenomenon which we had witnessed, and had our doubts as to the reality of it.

His statement was, in some points, entirely the reverse of the truth; and yet he did not intend to deceive: but his mind being filled with foregone conclusions, and his observation— if observation it might be called—being inaccurate, the rest of his reasoning was naturally dissipated.

That frogs, toads, snakes, and lizards occasionally issue from stones that are broken in a quarry, or in sinking wells, and sometimes even from strata of coal, at the bottom of a coal-mine, may be readily admitted; but, as Dr. Buckland well knows, it is the universal conviction of the zoologist—subject to—and these we shall presently allude—the evidence is never perfect to show that the reptiles were entirely enclosed in a solid rock; no examination is ever made until the reptile is first discovered by the breaking of the mass in which it has been preserved, and then examined without carefully replacing every fragment (and in no case that I have seen reported has this ever been done), whether or not there was any hole or crevice by which the animal may have entered the cavity from which it was extracted. Without previous examination, it is almost impossible to prove that there was no such communication. In the case of rocks near the surface of the earth, and in stone quarries, reptiles find ready admission to holes and fissures. We have a notorious example of this kind in the lizard found alive two years after the excavation of a hod of it, brought to Dr. Clarke.

The same author remarks, that the first effort of the young toad, as soon as it has left its tadpole state, and emerged from the water, is to seek shelter in holes and crevices of rocks and trees. 'An individual, which when young may hate thus entered a cavity by some very narrow aperture, would find abundance of food by catching insects, which like itself seek shelter within such cavities, and may have soon increased so much in bulk as to render it impossible to go out again through the narrow aperture at which it entered; hence it might be supposed to have been looked after by common workmen, who are the only people whose operations on wood and stone disclose cavities in the interior of such substances.'

Without, then, attempting to throw discredit upon the observations published upon this curious subject by authors whose character for veracity is unquestionable,—those of Guettard, in 1771, of Edwards, 1824; and of Mr. Thomas, in Silliman's Journal, in addition to those above alluded to for example,—we may conclude with Dr. Buckland, in his remarks on the last publication, that the several authentic and well-authenticated observations could not be more than a repetition of the facts so often observed, and admitted to be true, viz., that reptiles occur in cavities of stone, and at the depth of many feet in soil and earth; but they state not anything to disprove the possibility of a small aperture by which the cavities are of so small an extent that the reptiles have been admitted. The attention of the discoverer is always directed more to the toad, than to the minutiae of the state of the cavity in which it was contained.

Dr. Buckland and many other experiments in November, 1825. He observed twelve circular cells to be prepared in a large block of coarse oolitic limestone, from Hedgington quarry, near Oxford. Each cell was about one foot deep, and five inches in diameter, and had a groove or shoulder at its upper weight, fitted to receive a circular 115 of air, and a circular slate to protect the glass; the margin of this double cover was closed round, and rendered impenetrable to air and water, by a luting of soft clay. Another block of compact silicious sandstone (Pannent grit, of the Bristol coal formation), was made to contain twelve smaller cells, each six inches deep and five inches in diameter, and each under the same double cover as the first-mentioned cells. A live toad was placed in each of these twenty-four cells on the 26th Nov., 1825, and the double cover of glass and slate was then placed over the entrance. It did not last long, for a luting of clay. Dr. Daubeny and Mr. Dillwyn, who were present, ascertained and noted the weight of each toad (they had all been imprisoned together in a cucumber frame, some of them for two months previously), as it was immured. The largest cell contained 456 grains, and they were distributed equally, small and large, among the limestone and sandstone cells. The blocks were buried in the earth of Dr. Buckland's garden, three feet deep. On the 10th of December, 1826, these blocks, which had remained unopened for the period of their immuration, were examined. Every toad in the smaller cells of the sandstone block was dead, and so much decayed, that they must have been dead for some months. The greater part of those in the larger cells of the oolitic block were alive. No. 1, which was the heaviest, was undamaged, but the next cell, was reduced to 695 grains. No. 5, whose weight at the same period was 1185 grains, had increased, it is asserted, to 1265 grains. Dr. Buckland observes, that the glass cover over this toad's cell was slightly cracked, so that minute insects might have entered, and thus occasioned its death. In another cell, the glass of which was broken, and its tenant dead, there was a large assemblage of minute insects; and a similar assemblage was observed also on the outside of the glass of a third cell. In the cell No. 5, a toad which had been exposed to the period of their immuration, was examined several times during the second year, through the glass covers of their cells, but without removing them to admit air; they appeared always awake, with open eyes, and never in a state of torpor; but at each successive examination they became more and more emaciated, till at last they were found dead. The two toads which when first examined had increased in weight, and were at the end of the first year carefully closed up again, were not exempt from the common annihilation, but were emaciated and dead before the experiment was known to have taken place.

When Dr. Buckland enclosed these toads in stone, he at the same time placed four other toads, of moderate size, in three holes cut for that purpose, on the north side of the trunk of an apple-tree. Two were placed in the largest cell, the third each of the two smaller, which were designed to a circular, about five inches deep and three inches in diameter. These were carefully closed with plugs of wood, so as to exclude access of insects, and were apparently air tight. Every one of the toads thus ępegged in the
knoty entrails of the tree was found dead and de-
lected at the end of the first year.

Four toads were, at the time the others were shut up,
each placed in a small basin of plaster of Paris, four inches deep and five inches in diameter, having a cover of the same
material luted over them: these were buried at the same
time and in the same place with blocks of stone, and
on being examined at the same time with them, in December,
1836, two of the toads were dead; the other two alive,
having no doubt been killed by the frost.

Dr. Buckland concludes from the experiments generally,
that toads cannot live a year excluded totally from atmo-
spheric air; and from the experiments made in the larger
cells in the coble, that there is a probability that these an-
imals would sooner or later be excluded from them.
(Zoological Journal, vol. v. p. 314.)

These experiments bring us to faculties more especially
possessed by the Reptiles in general, and especially by the
Anomuran Batrachians.

Water Aspiration, and Water, Exhalation, and Transpi-
rature.—A rapid process of absorption and evaporation of
fluids, by the pores of the skin, gives to the Anomuran
Batrachians the power of resisting heat. If a frog be plunged
into water, of a temperature of 18° (centigrade), it will, not
it is asserted, go more than two minutes without being
left out so as to enable it to recover freely; yet a frog
will sustain the action of humid air heated to the same
temperature, for four or five consecutive hours. A sudden
temperature change, however, from a low temperature to a high one,
is generally fatal to these animals. Their excessive perspira-
tion is kept up by a regulation of the evaporation of liquid absorbed;
or the tranpiration of the matter, the quantity of which is augmented in proportion as the external heat is more intense; and the animal resists it as long as the moisture is not desiccated by the air. When
it can no longer repair the loss of the moisture already taken
up, by a fresh absorption of liquid, it perishes. The frogs,
in this particular of their organization, have been compared
to wet vessels, called Alcman's vessels, for with added water, the
transpiration permitted by their pores is regulated. Dr.
Townson, who made observations to some extent upon this
subject, and had two frogs, which he named Damon and
Musolea, found that a frog would sometimes absorb in
half an hour its own weight in water, in a few hours, nearly its entire weight; when the animal
was placed in a warm and dry situation, it gave off
this fluid nearly as rapidly as it had accumulated it.
He contends that the frog tribe never drink, and general
observers agree with him. But the frogs, toads, and
mud-suckers do not stutter liquids, being supplied by the
process before mentioned. The incapacity of some of these
animals, in a state of comparative desiccation, and their
apparent plumpness after they have renewed their supply of
humid air, is a fallacy. It is supposed that, if suddenly surprised, they can get rid of their load instanta-
ously. Few who have come on a frog by surprise, in a
most meadow, have not observed that, during its first leap,
it emits a quantity of liquid from its vent. Whatever
thisumption be, Dr. Townson, "it is as pure as dis-
tilled water and equally tasteless: this I assure, as well of
that of the toad, which I have often tasted, as of that of frogs." This fluid is the liquid absorbed, by the skin of the abdo-
men principally, and for which toads and frogs are e
ter on the human market. This liquid is a fre
good of this necessary supply, and in dry seasons toads will
bury themselves in moist sand or earth for the purpose of
sucking up through their skin any aqueous particles which may surround them. The fluid is contained in a sac, gen-

eral consisting of two blisters, situated in the lower part of
the abdomen under the viscera, and is conducted to the re-
teceptive by particular vessels, which are certainly not the
ureters or urinary canals from the kidneys: these urinary canals, also, are found being empty.

Brain, Nervous System, and Sense.—The brain and
nervous system of the Anomuran Batrachians are, as in the
reptiles generally, composed of an encephalon consisting of
a cerebellum, cerebrum, and medulla oblongata; a spinal
chord; and the nerves which are given off from these
to the different organs of the body. So far the
system is modelled upon that of man metamorphous animals and
birds, but the cerebellum is proportionally much less. The
nerves have also a stenodochorous nervous system, or a great
double sympathetic nerve.

Touch.—The naked skin and its sensibility to variations
of temperature would seem to indicate a considerable de-
gree of perception, as to the physical and even chemical
operations of the animal, from which it is easy to judge by the Bat-
touch, properly so called, can hardly exist in a high state of
development in the greater part of the Anomuran Batrachians.
They have, indeed, no nails on their toes, which are more
larger in the frogs than in the toads; and the tips of the toes, are
viewed and terminated in only a few appendages, as in Pippa, which has also an elongated fishe-
like the tree frogs also (Hygra), have the extremities of
their toes dilated into fleshy disks, which, like the aceta-
bula of the Squid, adhere by their circumference and enable the animals to walk in all directions upon flat
surfaces, and to adhere to them even when they are of
the smoothest nature. The sense of touch is probably more
highly developed here, where this organization is manifested.

Swell.—This sense would seem to be almost rudimentary
in the Batrachians. A simple opening puerced from the
base of the forelegs to the head, and connected with the
intestines, and concave membrane at its external extremity, moving
in unison with the respiratory action, is strongly contrasted
with the intricate and beautiful structure of the nasal or-
gans, which are so highly developed in the carnivorous
amphibians.

Hearing.—There is a considerable difference in the
structure of the organ of hearing among the Anomuran
Batrachians. The Pipis, for instance, have a sort of small valve
upon the tympanum, somewhat similar to that possessed by
the reptiles, and probably intended to protect the mem-

brane against the pressure of the water when the animal
is sedentary. The frog also (Hygra and Rana) have the tym-
panum distinctly manifested by the delicacy of its structure
when compared with the other integuments of the head. In
the toad, it is often extremely small, and it is not improbable to
find a good example of the organ of hearing in a prepara-
tion (No. 1575), in the Museum of the College of Surgeons.
It is the head of a bull-frog (Rana pippiana, Linna.), showing the free and wide external communication, or "meatus", of the organ of hearing. A short length of the tympanum, with
the fleshy, or drum of the ear, which is stretched across the
entrance of the meatus, and is adapted to repond to the
impulse of sound conveyed through air. The cavity of the
tympanum is laid open on the left side from below, showing the drum of the ear, and the tympanum, which forms the medium of communication between its membra-
num tympani and the tympanum and the internal ear. The
wide vertical passage, or Eustachian tube, by which the
vane of the tympanum communicates with the faucae, is
also laid open on the left side, but is seen entire on the
right. The communication preserves the equilibrium be-
tween the air in the cavity of the tympanum and the
atmosphere without; and an equitable pressure is consequently
sustained by the membrana tympani under every barome-
tric variation. This tympanum is found throughout the Bat-
archian group, and was observed by the author of the Catalogue, that the extent and freedom of the
Eustachian passage are in relation to the size and expension
of the tympanum membrane, and perhaps also its
form, which is convex externally, and therefore the
more liable to be affected by undue pressure from without,
being only supported behind at a small partial of its super-
ficial curve.—(Cat. Gallery Physiol. Series, vol. iv., part 1.)

Sight.—The precision with which a toad measures
closely the objects on which it gazes, and captures with its tongue the
moment the victim is within reach, seems to indicate a
high and accurate development of the organs of sight, as
applicable to short distances at least. The pupil is, in
general, round, but in the Anomuran Batrachians, whose limbs are
nearly tied up, for instance, it is angular or linear. The
humidity in the situation of the eye is prevented by a
membrane, but the crystalline humour has been noticed of great
density and of a more spherical figure in the animal's
species. The orbits are generally incomplete, and sometimes
protected, as in Ceratophyly, by folds of thickened cuticle.
In the Anuran Batrachians there are lachrymal glands, and the lachrymal canals are so pierced as to permit the tears to run into the cavity of the mouth.

Reproduction.—The male organs of generation in the Anuran Batrachians consist of true testicles situated in the cavity of the abdomen below the kidneys, and, the division of the spermatic duct, and the vascular and nervose canal, is the male external organ. The ovaries in the females correspond in situation with that of the testicles of the males, and are of considerable volume. Their free extremity forms a sort of trumpet-shaped opening, and the oviduct terminates in the cloaca, whence the oocytes are expelled. The male, however, describes the frogs of his country as having a large uterus divided by an internal partition into two cavities, from which two long convoluted oviducts arise, and terminate by open orifices at the sides of the heart. The ovaria, he says, lie below each kidney, and his bitches between the latter to exclude the eggs, and fecundate them as they are protruded. These eggs are enveloped in a sort of delicate, mucous, permeable membrane; they are, when excluded, most frequently agglommeted either in glutinous masses or large clusters, and more frequently so in the dogholes than in the water. There are however some curious modifications of the disposition of the eggs in certain species of the Anuran Batrachians. The accoucheur toad (Bufo Obtortans of Laurenti), for instance, assists the female in the cloaca to expel the eggs, and, by inserting his finger in her thighs, something in the form of a figure of 8. He is then said to carry them about till the eyes of the embryo become visible. At the proper period for hatching, he conveys the progeny to some stagnant piece of water, and deposits them, when the eggs break and the tadpole comes forth and swims about. The male Pipa, or Surinam toad, as soon as the eggs are laid, places them on the back of the female, and fecundates them. The female (see the cuts at the close of the chapter) would, of course, expel the eggs in the cloaca; but, by a peculiar division of her back, and more cells, in which the eggs are hatched, and where the young pass their tadpole state, for they do not quit their domicile till after the loss of their tail and the development of their legs; at this period the mother acts as a kind of nurse to her progeny.

Swammerdam gives the number of eggs in a female frog as 1400, and M. de Montbeillard counted 1300. In these eggs there is a greenish albumen which is not easily congelatable. The yolk or vitellus is absorbed by the embryo, and an abdominal cæcum indicates the umbilicus in young individuals. It is not rare to meet with double germ in a single egg, but most of these prove abortive, though some give birth to monsters with two heads, six legs, and two tails, as well as to hermaphrodites. The sex of the young is determined from the first by the character of the developing branchial sprouts; and M. de Montbeillard has observed that the symmetrical species of Anuran and Anuran Batrachians; and is recorded as being prolonged from a period of eighteen days to thirty-one and upwards before the male quits the female. There seems to be a preponderance of males over females; and to this most probably may be ascribable the frequent occurrence of frogs and toads sticking on the heads of fishes, such as carp and tench. In our climates, the early part of the spring is the season of reproduction, when the frogs and toads of both sexes quit the localities of their late hibernation and their ordinary haunts, and move instinctively to those stagnant waters which are proper for their purpose, and where they are then collected in swarms.

The young Anuran Batrachian enters life under an existence rather like that of a worm, with a cuticled cutaneous integument, and undergoes, like the insects, a series of metamorphoses or transformations till it arrives at its perfect state. In their first stage, the young have an elongated body, a laterally compressed tail and external branchies; their small mouth is furnished with horny hooks or teeth for the separation of vegetables, and they have a small tube on the lower lip by which they attach themselves to aquatic plants, &c. The external branchies next disappear, and become covered with a membrane, being placed in a sort of sac and completely surrounded by the body. In this state it is called in English a tadpole, and in French tilard, from the great apparent volume of the head. Soon the posterior limbs are gradually put forth near the origin of the tail, and are developed first; the anterior feet then begin to show them-
and he appears to have been misted into the second by the assertions of Dr. Garden. In the last edition of the Systema Naturae (the 12th) he places the great genus Rana between the genera Trigono and Draco, making it the leading genus of the class Amphibia. The Reptilia he shortly characterizes as "pedali, spirantes ore," and admits it into the genus Lacerta in addition to the genera above stated. The Amphibii Serpentes' and 'Amphibii Nantes' form the other two orders of the class of the Reptilia, and Dr. Garden's list of Batrachians, consisting of the following genera: the Pipas (Pipa), the Toads (Bufo), the Frogs (Rana), and the Tree-Frogs (Hylya). The author adds the genus Proteus, founded on the larva of Rana paradoxus.

Before the appearance however of the 'Specimen Medendi' of Laurenti, Rosel publishes his magnificent work on the Frogs of his country (Nurenberg, 1758). He is justly noticed by Cuvier as one of the most ingenuous observers and elegant designers of subjects of natural history.

Scopoli (1777) varies so little in arrangement from Linnaeus, though the characters are differently but not better worded, that he need not detain us from the work of Lacépède. published (1778, 1790) as a continuation of Buffon, under the title of 'Histoire Naturelle des Quadrupèdes Owenium,' or 'Histoire des Reptiles.' The first division of his oviparous quadrupeds he ranges the Frog tribe in three genera, Les Grenouilles, Les Raines, and Les Crapauds, and these genera comprise 33 species.

M. ALEX. BRONNIART (1759, 1800, 1803) divides his genera Reptilia into the following classes: Batrachians, Serpentes, Chelonia, Ophidian, and Batrachotomi: in this fourth order he adjoins the genera Grenouille, Crapaud, Raines, and Salamandre.

Latreille (1801, 1805) makes the Amphibia a class, which he divides into two orders, the Caducebranchiata and Perennbranchiata. Caducebranchiata being divided into the Anouros and tailless, and the taild (Urodèles). The first subdivision comprises the genera Pipa, Bufo, Rana, and Hyla.

Duclain in his 'Traité Général' (1802, 1803), adopts the method of Bronniart, and seems to have bestowed much research on the Anouros Batrachians, of which he has left an 'Histoire Particulière,' in one vol. 4to. with 38 plates representing 54 species.

Cuvier (1798, 1817, 1829) admits the following genera among the Batrachians in his last edition of the 'Règne Animal':—Rana, Ceratophryus, Dactylethra, Hyla (Calamita of Schneider and Merrem), Bufo, Bomarmor (Rhinella of Fitzinger, Oxyrhynchus of Spix), the Ototthoph (Cuv.), Breiteeps of Merrem (Engystoma of Fitzinger in P.), and Dr. Garden's.

DUMÉRIL, who states that he has made Reptiles his particular study, and who succeeded to the chair of M. Lacépède, has published much on the subject, and promises to end the last volume of the 'Reptiles' (Suites à Buffon) to present a complete table of arrangement. This work has not yet advanced to the Batrachians.

OPEL, besides his two memoirs in the 19th vol. of the 'Annales du Musée du Paris,' one of which was upon the Batrachians published in 1811 his 'Prodromus,' in 4to. His third volume of the 'Prodromus' is devoted to the Apoda (Cecilia), the Ecaudata or Anouros Batrachians (Frogs), and the Caudata, Urodèles or Tailed Batrachians (Bufo, Pipa, Rana, Hyla), which are the general of the Anouros Batrachians.

MERREM (1790, 1820, 1821) makes his second class, the Batrachians, consist of three orders, viz.: 1, Apoda (Cecilia); 2, Salientia; and 3, Gradientia. Among the Salientia, which are the Anouros Batrachians, are comprised the genera Hyla, Calamita, Rana, Breiteeps, Bommard, Pipa, and Bufo.

M. de Blainville (1816, 1826) divides the Reptiles into two classes, the second of which, Ichthyoid Amphibians or Nitidipèlwerus (naked-skinned) Reptiles, has for its first class four orders the Batrachians, which consist of the four leading generic forms of Anouros Batrachians, and are

* There are those who attribute this leading work to Winton, a chemist, and the companion of the second edition of the 'Nouvelles observations sur les Sciences naturelles,' and the class of the Aquatic Reptiles, as a distinct class of that of Weitzendorf.

1 Type, Rana Margaritifera.
separated into two suborders according to their habits, the first being the Aquaporous, and the second the Doragerous (Pips).

Mr. Gray (1825, 1831) considers the Amphibia a separate class, and, like Fitzinger (1826), divides them into those which undergo a metamorphosis and those which do not. In sub-dividing the Rana into the genera Rana, Ceratophrys, Hyla, Bufo, Rhinella, Dactylethera, Bombinator, Strombus, Breviceps, and Asterodactylus (Wagler), or the Pips. In 1833 he introduced to the Zoological Society a toad (Bominiator Australis) from Swan River, observing that the form had not been previously met with out of Europe.

The zoological divisions of MM. Carus and Fischer appeared about the same time, and they adopt, with regard to the Reptiles, very nearly the classification of Merrem and the views of Oken, whose works were published in 1809, 1816, and 1821.

Dr. Hartman, in 1825, published his account of the American Reptiles, which he divides into Batrachians, Ophidian, Saurnian, and Chelonian. Several species of the Caudated Batrachians are enumerated, and they are followed by the Tailless Batrachians, as Rana, Bufo, Hyla.

Mr. Haworth, in his dichotomous or binary method (1825), divides the Batrachian into Apoda and Pedata: the latter he subdivides into Salientia, as Pipa, Hyla, Bufo, Bombinator, Breviceps, Rana; and Crestaeus, which he subdivides into the Mutabilia (those which undergo a metamorphosis), Salamandra for instance, and the Immulatabilia (those which do not, Proteus and the Sirens).

Fitzinger (1826) separates the Reptiles into the Monosoma and Dipsoma, and the latter he subdivides into 1, the Mutabilia; 2, the Immulatabilia. In the first subdivision are found the Rana, the Bufonoids, the Bombinatoroids, the Pipoids, and the Salamandroidea. The four first embrace the whole of the Anuran Batrachians. The Pipoids are characterized as having no tongue, an organ which exists in the three other families. In the Bombinatoroids the tympanum is hidden, whilst it is perceptible in the Bufonoids, which have no teeth, and are thus distinguished from the Rana, where the teeth are distinct.

Ritten (1828) divides the Anuran Batrachians or Pygopogoti into the Tree-Frogs, Bdallipodobatrachians; the Frogs, Phyllobothobatrachian; and the Toads, Dactylobothobatrachians.

The system of Wagler (1830) takes organization as the basis of its arrangement, and he makes the class Amphibia consist of eight orders, viz.: the Tortoises, the Crocodilians, the Lizards, the Serpents, the Orcetes, the Cecilus, the Frogs, and the Ichthyopods.

He then characterizes the seventh order, that of the Frogs (Rana), as having no penis, and undergoing a metamorphosis; and divides them into two families, the first consisting of those without a tongue (Aglossa), and the second of those which possess a tongue (Phaneroglossa). The first of these consists of but one genus, Asterodactylus (Pipa); the rest of the genera of the Anuran Batrachians belong to the second. Such are Xenopus (Wagler), Microps (Wagler), Calamila (Fitzinger), Hypnothus (Wagler), Auletris (Wagler), Hylas (Wagler), Phylomoderus (Wagler), Scinax (Wagler), Dendrobates (Wagler), Phylodryas (Wagler), Euryhydrus (Wagler), Cystignathus (Wagler), Rana (Linnaeus), Pseudis (Wagler), Ceratophrys (Boul), Megalophrys (Kuhl), Hemiplacanthus (Wagler), Syntoma (Wagler), Chaunus (Wagler), Paludicolosa (Wagler), Pelobates (Wagler), Atrays (Wagler), Bombina (Merrem), Bufo (Linnaeus), Brachysphalus (Fitzinger).

Müller (1832) divides the Amphibia into two great orders, the Scaly and the Naked. The Anuran Batrachians belong of course to the latter. He thus places the characters of the two orders in opposition to each other.

Scaly. Naked.


Dr. Day and MM. Saint Ange and Webster have, as we before stated, ascertained that the auricle is apparently simple, in its reality separated into two divisions by a complete partition.
Fossil Frogs.

Fossil frogs have been found in the coal-formation of the Rhine (Papier-kohl) in company with the fishes Lanruciurn and Lepidurus. Two species have been described, and there are many examples in the museum at Bonn. In this country specimens are to be found in the collections of Lord Cole and Sir Philip Egerton, bart.

Pipa biodec (half nat. size). South America.

FROISSART (JEAN, or JOHN), was born at Valenciennes about 1337. He was the son, as is conjectured from a passage in his poems, of Thomas Froissart, a herald's daughter, no inconsiderable profession in the days of chivalry. The youth of Froissart, from twelve years upwards, as he himself informs us, was spent in every species of elegant indulgence. In the midst of his dissipation however, he early discovered the ardent and inquisitive spirit to which was always attached, and even at the age of twenty, at the command of his 'dear lord and master, Sir Robert of Nanver, lord of Beaufort,' he began to write the history of the French wars. The period from 1326 to 1336 was chiefly filled up from the chronicles of Jean le Bel, canon of Liege, a confidant of John of Hainault, and celebrated by Froissart for his diligence and accuracy. It is reasonable to believe that this work was interrupted during a journey to England in the train of Philippa of Hainault, the heroic wife of Edward III., and mother of the Black Prince. Froissart was for three or four years secretary or clerk of her chamber, a situation which he would probably have retained but for a deep-rooted passion for a lady of Flanders, which induced him to return to that country; a circumstance equally favourable to the history of the Conquest, and unfortunate for that of Britain. During his residence in England he visited the Scottish mountains, where he traversed on a palfrey, carrying his own portmanteau, and attended only by a greyhound. His character of historian and poet introduced him to the court of David II., and to the hardly less honourable distinction of fifteen days' abode at the castle of Dalkeith with William, earl of Douglas, where he learned personally to know the race of heroes whose deeds he has repeatedly celebrated. He was in France at Melun-sur-Seine about April 20th, 1366; perhaps private reasons might have induced him to take that road to Bordeaux, where he was on All Saints' day of that year, when the princess of Wales was brought to bed of a son, who was afterwards Richard II. The prince of Wales settling out a few days afterwards for the war in Spain against Henry the Bastard, Froissart accompanied him to Dax, where the prince resided some time. He had expected to attend him during the continuance of this great expedition, but the prince would not permit him to go farther; and shortly after his arrival sent him back to the queen his mother. Froissart could not have made any long stay in England, since in the following year, 1368, he was at different Italian courts. It was this same year that Lüül, duke of Clarence, son of the king of England, espoused Joan, daughter of Galeas II., duke of Savoy, Froissart, who probably was in his suite, was present at the magnificent reception which Amadeus, count of Savoy, summoned the Count Verdi, gave him on his return: he describes the feasts on this occasion, and does not forget to tell us that they dined a viaray of his composition. From the court of Savoy he returned to Milan, where the same count Amadeus gave him a good corteda, a sort of coat, with twenty florins of gold; from thence he went to Bologna.
and Ferrara, where he received forty ducats from the king of Cyprus, and thence to Rome. Instead of the modest equipage he travelled with into Scotland, he was now like a man of importance, travelling on a handsome horse, attended by a hackney. It was about this time that Froissart is said in a letter to have written an admittance to the death of Queen Philippa, which took place in 1369. He composed a lay on this melancholy event, of which, however, he was not a witness; for he says, in another place, that in 1395 it was twenty-seven years since he had seen England. According to Vossius and Bullart, he wrote the life of Queen Philippa; but this assertion is not founded on any proofs.

Independently of the employment of the clerk of the chamber to the queen of England, which Froissart had held, he had also been called to the service of the household of that of John of King of France. Having however lost his patroness, he did not return to England, but went into his own country, where he obtained the living of Lestines. Of all that he performed during the time he exercised this ministry, he tells us nothing more than that the tavern-keepers of Lestines had five hundred franes of his money in the short space of time he was their rector. It is mentioned in a manuscript journal of the bishop of Chartres, chancellor to the duke of Anjou, that, according to letters sent in 1367 from St. Jean des Vignes to three priors, Froissart was to be sent on a mission to the fifty-six monks of the 'Chronicle' of Froissart, rector of the parish of Lestines, which the historian had sent to be illuminated, and then to be forwarded to the kingdom of England, that Froissart was to have the commission afterwards handed over to Wenceslaus of Luxembourg, duke of Brabant, perhaps in quality of secretary. This prince, who had a taste for poetry, commissioned Froissart to make a collection of his songs, rondeaux, and virelais; and Froissart, adding some of his own, composed the romance of the line of Meliador, under the title of 'Meliador; or, the Knight of the Sun'; but the duke did not live to see the completion of the work, for he died in 1384.

Immediately after this event, Froissart found another patron in the person of that same rector of his chapel, for which Froissart testified his gratitude by a pastoral and epistolary on a marriage in the family. He passed the years 1385, 1386, and 1387 sometimes in the Biaisois, sometimes in Touraine; but the count of Blois having charge of the country, he left unfinished, he determined in 1388 to take advantage of the peace which was just concluded to visit the court of Gaston Phoebus count de Foix, in order to gain full information of whatever related to foreign countries and the more distant provinces of the kingdom. In the month of February, 1389, he returned to the residence of the count de Foix, in company with Sir Ewain du Lyon, is one of the most interesting parts of Froissart's 'Chronicle.' The count de Foix (of whom we have already spoken as the diocesan of his benefactor) had just become a member of his household. Here Froissart used to entertain Gaston after supper by reading to him the romance of 'Meliador,' which he had brought with him. After a long sojourn at the court of Ortez he returned to Flanders by the route of Avignon. We learn from a poem referred to by Monseigneur de St. Palaye, that on this occasion the historian, always in quest of adventures, met a personal one with which he could have dispensed, being robbed of all the ready money which his travels had left him. After a series of journeys into different countries for the sake of obtaining information, we find him in 1390 in his own country, solely occupied in the completion of his history, at least until 1392, when he was again at Paris. From the year 1378 he had obtained from pope Clement VII, the reversion of a canonry at Land and in the diocese of his patronage, which was confirmed in 1393, and elsewhere, he calls himself canon of Lille; but pope Clement dying in 1394, he gave up his expectations of the reversion, and began to qualify himself as canon and treasurer of the collegiate church of Chimay, which he had been wont to the friendship of the count de Blois.

In 1395 Froissart revisited England, where he was received with marks of high favour and affection by Richard II, the royal family. Here he went on collecting for his history, and in twenty years he had added to the annals of the king, who was much delighted with it, 'for he could speak and read French very well.' After a residence of three months Froissart left England, and at his departure received from the king a silver goblet containing a hundred nobles. He finally settled at his benefice of Chimay, and employed as usual the hours of his leisure in arranging and detailing the information collected in his travels. Four years brought him to 1399, when the melancholy fate of his benefactor Richard II. became the subject of his latest-chronicled events. It is uncertain how long, if Froissart survived the death of Richard and the conclusion of his 'Chronicle;' he was then about sixty years old, and died shortly after at Chimay, according to an entry in the obituary of the chapter.

The period of history embraced in Froissart's 'Chronique' is from 1325 to 1400. The best of the old editions of the original is that of Lyon, in four volumes, in folio, 1535. The latest is that in the 'Collection des Chroniques Nationales Françoises, avec Notes et Eclaircissements, par J. A. Froissart,' in five volumes, 1810-1826. Froissart's 'Chronicle' seems to have been first printed at Paris by Ant. Verard, without date, 4 vols. in folio. and was reprinted by Guili. Eustace, Paris, 1514. There are two English translations; one by Bourchier lord Berners, made at the river Frome, a branch of the Frome, and some controversy. London, Pinse, 1525-6; reprinted in two volumes, 4to., London, 1812, under the editorial care of E. V. Uterson, Esq.; the other, 'with additions from many celebrated MSS,' translated by Thomas Johnes, Esq., appeared from the Hafed press, Newcastle, 1718.

The principal particulars of Froissart's life have been here condensed from that by St. Palaye, translated and edited by Mr. Johnes, 4to., London, 1801, and revised and re-published in 4to., London, 1812. There are several splendidly illuminated manuscripts of Froissart's 'Chronicle,' quite or nearly contemporary, preserved in the British Museum: one a complete copy, belonging to the old royal library of the kings of England, 14 D. Vii.; another consisting of two leaves, from a manuscript in the same collection, 18 E. 1. and 11.; a third in the Harleian Library, MSS. 4379 and 4380, containing the fourth book only; the fourth copy is in the Arundel collection lately transferred from the library of the Royal Society, No. 35, the MS. is mutilated, and has lost many of its illuminations.

FROME, a town in the parish of Frome Selwood and hundred of Frome, and in the county of Somerset, 105 miles west-south from London. It is agreeably situated on the river Frome, a branch of the Frome, which after a north-east declivity of several hills, consequent to the forest of Selwood, whence the town is frequently called Frome-Selwood. It is lighted with gas, but irregularly built, and the streets are narrow and ill-paved. The borough of Frome was created by an act of the 4th and 5th Elizabeth, 1562; and was, under the same act; it now returns one member. It is not incorporated. It was formerly governed by a bailiff, but is now under the superintendence of the county magistrates. Frome is in the diocese of Bath. The parish church, dedicated to St. John Baptist, is a handsome structure, surmounted by a quadrangular tower with a neat stone spire. The average net income of the vicarage is £246; patron, the marquis of Bath. The town is said to be prospering, and contains several extensive manufactories of wool, cloth, oils for rolling iron, and some breweries.

According to the census taken in 1851, its population was 11,240. There is a grammar-school of the foundation of Edward VI., besides several other institutions, among which is a good charity-school. Its market-day is Wednesday. The cattle-fairs are held 24th February, 22nd July, 14th September, and 25th November. (Carlisle's Top. Dict.; Collinson's Hist. and Ant. of the County of Somerset, Bath, 1791; Beauties of England and Wales; Parson's Antiq. Trans.; Vol. X.—3 B)

FROND, a botanical term intended to express such organs as are composed of a stem and a leaf combined; the leaves of ferns and palms were thought to be of this nature; but in the case of many other plants, the leaves and branches or fronds, which are of similar structure, are in no important respect different from those of other plants, the term frond has ceased to have any precise meaning, and is disused by the botanists.

FRONDE, the name of a political fiction in Franco-Siècle, it was a scheme of political change brought by the prime minister, Cardinal Mazarin, and to the queen regent, who supported him. In consequence of some disputes between the parliment of Paris and the court, on the occasion of some new taxes levied by the minister, the car-

P C, No. 647.
FRONTO, MARCUS CORNELIUS, born at Cirta, in Africa, of an Italian family, after studying in his own country, came to Rome in the reign of Hadrian, and acquired great reputation as a rhetorician and grammarian. Antonius Pius appointed him protonotary apostolic, and in this function he was intrusted with the episcopal see of Rome, and the care of the Christian religion in it, and was confirmed in his office by Julius Aurelius and Lucius Verus, whose confidence and affection he gained, as is proved by their letters. After becoming protonotary, Fronto was appointed to a government in Asia, and was so much beloved by the people that they presented him from filling his office by a petition to the emperor, to which he yielded. His learning and his instructive powers were so acknowledged with praise by Aulus Gelius, the historian Appian, and others of his contemporaries. He died in the reign of Marcus Aurelius, at an advanced age. Until of late years we had nothing of his person, or of his life but the letters of Marcus Aurelius; Differentiæ Verborum, being a vocabulary of the so-called synonyms; but in 1813 Angelo Mai having discovered in the Ambrosian library at Milan a palimpsest MS. on which had been originally written some letters of Fronto to his two nephews, the quires of which, though not entirely obliterated, and published it with notes. It happened, by singular good fortune, that Mai, being some years after appointed librarian of the Vatican, discovered in another palimpsest volume another part of Fronto's letters, with the answer of Marcus Aurelius south from the province of Lepini, which volume came originally from the convent of St. Columbanus, at Bobbio, the monks having written them over with the Acts of the 1st council of Calecedon. It happened that one of the volumes was transferred to Milan, and the other to Rome. Cossa mentions these Mss. in his Comment. de Marmoris Frontoii et M. Aureli imperatoris epistula: L. Veri et Antonini Pii et Appiani epistularum reliquis: Fragmenta Frontoii et scripta grammatica, 8vo. Rome, 1823. These letters are very valuable, as throwing additional light into the life of Fronto. The discovery, however, of a quire of letters of Antoninus Pius is also interesting. There are besides many letters of Fronto to various friends, a few of which are in Greek. The work was translated into French, and published with notes, by J. V. Cossa, 1819.

FRISONONE, DELEGAZIONE DI, a province of the Papal state, is bounded on the north and west by the Comarca or province of Rome, east by the Terrò de Lavoro in the kingdom of Naples, and south by the Mediterranean. Its greatest breadth is about 40 miles; its greatest length, about 50 miles. (Neiberna, Gemibile Italiani.) Its population in 1830 was 123,300. (Calendri, Saggio Statistico del Stato Pontificio.) This province includes also in its jurisdiction the small district of Porto Corvo, which is in the valley of the Liris, and between the Liris and the Pave, the pope. The province of Frisonone consists of four natural divisions: 1. The valley of the Sacco, which is fertile; 2. The mountains north of it, the Hernica Saxa, or Rocks of the Hernici, which are mostly barren; 3. The Mounts Levini, Velorum, Montone, and the valley of the Sacco, which are partly cultivated; and 4. The Pomptine Maraes, extending south of the Mounts Levini to the sea-coast as far as Monte Cercello and Terracina. The province contains 7 towns and 45 terrae, or villages, having a communal council, and 2 bishops, with jurisdiction over a town in a hill above the junction of the river Cosa with the Sacco, is the capital of the province, and the residence of the delegate. An account of the principal towns of this province is given under CAMPAGNA DI ROMA.

FRONT Bearer, or Cryphorus, an instrument invented by Dr. Wollaston for exhibiting the freezing of water in vacuo, and at a distance from the source of cold; his directions for making it and for its use are nearly given in the Philosophical Transactions. Let a glass tube be taken, having its internal diameter about one-eighth of an inch, with a ball at each extremity of about one inch in diameter, and let the tube be bent to a right angle at the distance of half an inch from each ball. One of these balls should contain a little water, but if it is...
more than half full, it will be liable to be burst by the expansion of the water in freezing; the remaining cavity should be as perfect a vacuum as can be readily obtained. One of the balls is made to terminate in a capillary tube, and when water admitted the following day has been boiled over a lamp for a considerable time, till all the air is expelled, the capillary extremity, through which the steam is still issuing with violence, is held in the flame of the lamp till the force of the vapour is so far reduced, that the heat of the lamp will not melt the sugar.

When an instrument of this description has been successfully exhausted, if the ball that is empty be immersed in a freezing mixture of salt and snow, the water in the other ball, though at the distance of two or three feet, will be frozen in a few minutes. The vacuum contained in the empty ball is condensed by the common operation of cold, and the vacuum produced by this condensation gives opportunity for a fresh quantity to arise from the water in the opposite ball, and with so great a reduction of its temperature, that the water freezes.

According to the doctrine which does not admit of the existence of positive cold, we should represent the heat of the warmer ball to be the agent in this experiment, generating steam as long as there remains any excess of heat in the vessel, which is caused by the abstraction of its abstraction, we must say that the cold mixture is the agent, and may observe in this instance, that its power of freezing is transferred to a distance by what may be termed the medium of a vacuum.

FROZEN OCEAN, a term used to indicate the seas surrounding the Poles, in which great masses of ice swim about. It is consequently synonymous with Ice Sea, and in some degree also with what are called the Arctic and Antarctic Seas.

FRUIT, in botanical language, signifies that part of a plant in which the seed is lodged, whatever its size, colour, or texture may be, so that the seed-like grain of a sage, the grain of corn, the nut of a chestnut, the dry capsule of a larch, or a rather hard berry, like a cranberry, or a pike-apple. In the ordinary acceptation of the term however the word fruit is exclusively applied to seed cases which are eatable, and generally such as require no preparation to render them fit for food.

The climate at the different parts of the globe, and the climate of those parts of the temperate regions which have been introduced, at one period or another, into Britain. The general from which these have sprung are comparatively few, and chiefly included in the natural orders Rosaceae, Vitaceae, Urticaceae, and Grossulariaceae. To the first of these are to be referred the genera producing the species called apples, pears, plums, cherries, apricots, peaches, and nectarines, quinces, medlars, raspberries, and strawberries; to the second, the vines; to the third, the fig and mulberry; and to the fourth, the roses and blackberries. Amongst the Musaceae are the banana and flibbert belonging to Coralyceae; walnuts to Juglandaceae, and the melon and pine-apple respectively to Cucurbitaceae and Bromeliaceae.

In this place we shall briefly enumerate what may be considered as the chief fruits of each of the objects of cultivation.

Apples are the most numerous class in cultivation. It has been conjectured that they were brought to this country by the Romans; but it is doubtful whether the varieties then introduced would succeed in this climate, presuming on the fact that the Mole di Carlo, well known as being so exceedingly beautiful and delicious in the North of Italy, has, in one of our finest English summers, proved pale and insipid, and that the apples of the South of Europe are generally worthless in England. A hardy breed, it is more than probable, was introduced by the Normans, especially of such as were suited for the manufacture of cider.

Apples are usually divided into three principal sorts, according as they are fitted for dessert, for kitchen use, or cider. For dessert, the following are early varieties: Early Red Margaret, Early Harvest, Oslin, Kerry Pippin, and Summer Golden Pippin. In succession to these, the Wormsley Pippin, King of the Pippins, Golden Raintree, Ribston Pippin, Court of Wick, Pearson's Plato, a really early kind, excellent, and superior to the Malus communis, of the very highest excellence, Hughes's Golden Pippin, Herefordshire Pearmain, Lamb Abbey Pearmain, Court-Pendu plat, which blossoms late, thereby escaping the spring frosts, Reinette du Canada, Old Nonpareil, and Scarlet Nonpareil, a Dutch Crab, which is superior to any of the others, is considered the most productive variety. For cider, the commonest are the early sorts, Keepers, Wetherby, Conker, Bolney, and Industry, the last two being the hardiest and most productive.

These two kinds of Pears, so few, till lately, having originated in this country; most of the kinds in former cultivation were from France, but they generally required the protection of walls. The greater intercourse with the continent consequent upon the establishment of peace in 1815, led to the introduction of a number of new and hardy varieties of this fruit from Belgium, where its cultivation and improvement had been, and still are, attended to with great assiduity. These new varieties, with some of equal merit, and even superior to the old, have been admitted, chiefly in the form of nursery plants, by the Duke of Buckingham, Northumberland, the Duke of Brunswick, and the Duke of Dorset, to the extent of one in every three pears, and have been introduced into the gardens of the Duke of Bedford, Lord North, Lord Auckland, Lord Byron, Lord Stanhope, and various other noblemen, from the introduction of which the kinds in cultivation have been increased to about one hundred, of which the following are the most worthy of notice: the following are the most worthy of notice:

2. Beurre Dieil.
5. Glout Moreau.
6. Passe Colmar.
8. Easbeer.

These latter are introduced in the order of becoming fit for use. For kitchen use: Beurre d'Heri, for preserving, and very few from allegations; Beurré Musqué, Spanish Bon Chrétien, Double de Guerre, Citron d'Angleterre, Uvedale's Monarch. For preserving: Oldfield, Barland, Longland, Teinton Squash.

The best varieties of Pears for dessert are, the Green Gage, Washington, Reino Claque, Violette, Drap d'Or, Kirke's Coe's Golden Drop, Blue Imperatrice. For kitchen use: Orleans, White Magnun Bonum, Shropshire Damson, which last is excellent, for preserving; and also the St. Catherine's, Coe's Golden Drop, Green Gage, and Questeche, for its quality which the German Prunes of the shops are made, by slow and repeated drying in an oven.

The best cherries, as it is said, were first cultivated in this country at Sittingbourne, in Kent, where they are supposed to have been introduced about the time of Henry VIII. That county is still famous for a sort called the Kentish cherry, identical with some of the varieties of the Montmorency and other sorts of cherries, large, sweet, and acid, and much used for pies. They have also the peculiar property of the stalk adhering very firmly to the stone that the latter may be drawn out without breaking the skin, excepting at the base. The fruit is then dried in hair sieves in the sun, or preserved in wine. The best cherries for dessert are the Elton, Downham, May Duke, Royal Duke, Knight's Early Black, Early Purple Guigne, Bigarreau, Florence. For preserving, the Kentish and Morelle are best.
APRICOTS in cultivation are of few varieties compared with any of the preceding kinds of fruits, and of those the most useful are the following:—Large Early, Breda, Moorpark, Royal, and Turkey. The Breda is the best of all standards, and when the season is favourable, the fruit on such, although smaller than that grown against a wall, is, notwithstanding, bigger flavoured. A variety called the Muscat-Muscat may be noticed, although not recommended for table use. It was called Fraxinus by the Romans, a corruption of which name is traceable in the modern one of Apricot. In consequence of the tree blossoming so early, its blossoms, particularly in the case of young trees, are extremely liable to drop off in setting. This is not to be wondered at, as the blossoms are not protected, and the flowers would thus be placed under circumstances comparatively more natural.

Peaches and Nectarines require the aid of a wall to bring them to perfection in this climate, and in the northern counties of Britain the protection of glass is also requisite. They likewise rank among the kinds of fruits which are considered of sufficient value to be forced. A selection of the best varieties of peaches is as follows:—Nottingham, Medlar, Moor, Greening, Russet, Bellegarde, Late Admirable. The two very best nectarines are the Elruge, which has little or no red at the stone; and the Violette Haute, the flesh of which is rayed with red near the stone; this serves as a principal distinction between these two varieties. For this sake of variety, the Fiamon Orange and the White Nectarine may also be included. A selection of peaches for forcing may consist of the Bellegarde, Nobleesse, Grosse Mignonnet, Royal George, Royal Charlotte, and Barrington. Nectarines for the same purpose are the Currant, the Large End, and the Large Scarlet.

The best variety of Quinces is the common one. The Portuguese Quince is distinct; but its fruit does not ripen so well in this climate as the common quince. Its wood however swells more in conformity with that of the pear, and it therefore makes a magnificent apple.

The principal varieties of the Medlar are the Large or Dutch, the Upright or Nottingham, and the Stoneless. The first is esteemed for its size, and sometimes for the form of the fruit, on account of the rustic crooked appearance which it assumes. The second is highly esteemed for its quality as regards flavour; and the third is small without stones or seeds, and keeps longer than the others.

Raspberries compared with many of the fruits mentioned above are in their character as cultivated varieties from that of the bushy Rubus idaeus from which they have arisen: for instance, the difference between the wild sloe and the green grape is very great; whereas the wild raspberry growing in the woods differs only slightly from the wild gooseberry, and forms but a minor variety cultivated in gardens. Good varieties are the Red Antwerp, Yellow ditto, Barnet, Cornish, and Red Globe.

Strawberries are now considerably reduced in regard to the number of varieties in cultivation. By the introduction of 'Keen's Seeding,' the very coarse sorts have been mostly banished even from the streets of London; this variety having proved the best of all for the market, combining very good flavour with the properties of being of large size and very prolific. Other varieties deserving cultivation are those of the Single, Evesham, and Rose Ruby Scarlet, and where wanted for confectionary, the Old Scarlet, which retains a fine colour, Dowton, Elton, Old Pine, Prolific or Conical Hautbois, and the Large Flist do.

The alpine and wood strawberries require to be occasionally watered with rain in very dry weather. The chief open vineyard culture is not practised to any extent in England at the present time, nor is it likely ever to become profitable. Varieties of wine grapes therefore need not be noticed here, farther than by stating that they are very numerous, and that the chief kind of wine oil lies in the Miller's Burgundy, which is indeed one of them, and is the sort of black cluster grape with woolly, mealy leaves, commonly seen on the walls of houses near London. The following are suitable for a vineyard:—Black Frontignan, White Frontignan, St. Peter's St. White, Morocco, Red Frontignan, White do., Grizzly do., Royal Muscadine, Chasselas Musquée, White Muscat of Alexandria; the last requires a strong heat. For walls, perhaps none fruits better, or forms a banderole bunch than the Peach, although done so, a warm, or more starchy speaking, a dry subsoil is absolutely necessary, whether it be grown as a standard in the open ground or against a wall, or forced under glass. Wherever the soil is retentive of water, it will retain the coldness of winter oil in the soil; and generally forms a ragged bunch in consequence of a great number of the berries being small and abortive; the Black Prince and Espierina will sometimes succeed; and the Early Black July and Burgundy are one of open attachment, as is the autumnal date of the latter are very small.

The only fruits still remaining to be noticed, the varieties of which are of any importance, are figs, gooseberries and currants, and pears.

In some parts of England the Fig bears in the open air; but in others, whether done so, a warm, or more starchy speaking, a dry subsoil is absolutely necessary, whether it be grown as a standard in the open ground or against a wall, or forced under glass. Wherever the soil is retentive of water, it will retain the coldness of winter oil in the soil; and generally forms a ragged bunch in consequence of a great number of the berries being small and abortive; the Black Prince and Espierina will sometimes succeed; and the Early Black July and Burgundy are one of open attachment, as is the autumnal date of the latter are very small.

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The Pink-Apple is the only tropical fruit which is cultivated to any extent in this country. The best varieties are those from Mexico, Jamaica, Black Antigua, and Black Jamaica. The Envilue and White Providence are cultivated more for their size than flavour.

FRUITS, PRESERVATION OF. The apple and pear, the two staple fruits of this country, are often kept under vessels containing a mixture of charcoal and dry salt, or air-tight boxes, under which a bell-glass cemented down air-tight; this must not be done on wood the least resinous, for even the white deal, which, when made into open shelves, communicates none of its flavour to the fruit, yet when supporting a bell-glass, strongly taints it. If the fruit is placed in such boxes, it, by the confined and accumulating exhalation. 12. Buried in a box placed on four bricks, under another box inverted, in an excavation so deep that the upper part of the fruit may be 15 or 2 feet below the surface of the earth. 13. In CAH, in earth. 14. Reposing on wheat-straw, with or without a covering of the same. 15. In a box of wheat or oats. 16. In flax-seed chaff. 17. In powdered charcoal; this, if it cannot prevent, will in no degree contribute to decay, either internally or externally. 18. In a substance in which the Imported Newtonian pippins are frequently packed, and they would arrive much sounder than they do were it not for the bruises they evidently appear to have received previous to exportation. 18. In dry ferm lees.

Amongst so great a variety of modes, it is obviously of considerable importance to ascertain not only which are the best, but which experience has proved to the worst. This inquiry is most advantageously pursued by settling in detail the various circumstances connected with the preservation of fruit.

The treatment of the fruit after gathering is by no means uniform; some lay it directly on the shelves of the fruit-room, or wherever else it is intended to remain till fit for use; others cause it to undergo a process of fermentation, called staling, by throwing it in a heap, and covering it with a dry substance, generally straw; in some instances even blankets have been used for this purpose. After it has perspired for ten days or a fortnight, it is spread out at a time when the air is dry, in order to expel the evaporated moisture. All sound specimens, or even such as are suspected of being so, are then separated. In the case of particularly valuable sorts, it has been recommended to wipe off the moisture with flannel; but this proceeding, requiring closely fitted apparatus, has not been found applicable to every case.

With regard to the final storing up, as it has been proved by experience that certain methods successfully practised by some, have turned out a failure when attempted by others, and as these fruits are extensively cultivated by persons variously circumstances, some of whom are compelled by necessity to practise perhaps not the very best mode, but the best they can command, it will be proper to detail the various methods that have hitherto been tried, in order that such as are most deserving of recommendation may be pointed out, as well as those which ought to be avoided in every possible case.

The following are the different modes in which apples and pears have been deposited for winter use.—1. In single layers on the bare shelves of a fruit-room. 2. In the same manner, but a circulation of air is required, and this can be obtained occasionally, as it absorbs the evaporation. 3. In close drawers; one layer, or several layers in depth. 4. In dry casks without any interposing material; a few weeks after they are first placed in the cellar, some of the fruit is likely to be picked over, as the cask cannot be made perfectly dry and re-filled, if the drawers be closely fitted, and the fruit on no account disturbed till unpacked for use. 5. In boxes, cases, large garden pots, or jars, with puro and dry sand interposed between the layers of fruit. 6. The fruit may be laid in such a way as to allow it to come in contact with the fruit, the mouths of the jars being covered with a piece of slates, and the whole plunged in a quantity of dry sand, so as to be several inches from the free atmosphere. The sand being a slow conductor of caloric, the sudden changes of temperature and their powerful effects in causing the decay of fruits are avoided. 7. In heaps in a dry airy loft, a slight covering of straw being given to protect them from frost. 8. In baskets lined with straw. 9. In close cellars excluded from the light, which is in all cases injurious; 10. On a shelf, under a bell-glass cemented down air-tight; this must not be done on wood the least resinous, for even the white deal, which, when made into open shelves, communicates none of its flavour to the fruit, yet when supporting a bell-glass, strongly taints it. 11. On a shelf, in the same way. 12. In a box placed on four bricks, under another box inverted, in an excavation so deep that the upper part of the fruit may be 15 or 2 feet below the surface of the earth. 13. In Chill, in earth. 14. Reposing on wheat-straw, with or without a covering of the same. 15. In a box of wheat or oats. 16. In flax-seed chaff. 17. In powdered charcoal; this, if it cannot prevent, will in no degree contribute to decay, either internally or externally. 18. In a substance in which the imported Newtonian pippins are frequently packed, and they would arrive much sounder than they do were it not for the bruises they evidently appear to have received previous to exportation. 18. In dry ferm lees.

From the above it is sufficiently evident that variations in the state of the atmosphere, as regards its temperature, have injurious effects by the expansion and condensation of the juices, and by the deposition of moisture on the surface, partly owing to atmospheric humidity, but chiefly to the circumstance of the latter being condensed upon the fruit, as above explained. This deposition of moisture tends to make the skin become tender and less efficient as a conductor. It therefore follows, that where fruit is not kept closely packed, it should be exposed to as little change of temperature as possible, and should also be preserved from the full effects of an atmosphere saturated with moisture. The skins of fruit thus secured are uniform, and the temperature and dryness, or nearly so, there is no doubt as to the superiority of flavour which the fruit would acquire. The watery particles would exahale, and at the same time shrivelling would not take place to any great extent, hence this chieflly of its aromatic, or the surface of the case, or at least less covered with a secretion, technically called the bloom. One of the best ways of remaining to the bloom, is that one will have observed on grapes and plums, on both of which it is very conspicuous, and although less so on apples and pears, yet it does exist on them, and its use is to pro-
test, in a great measure, the skin from the effects of moisture. Some fruit-growers are so well aware of this that they will not even handle their most choice wall-pears in gathering, except by the stalk.

Light is found to be injurious; all agree that fruit keeps best in total darkness. This arises from a specific stimulus being exercised upon the vegetable tissue by this agent. If a leaf, a green branch, or such a green surface as that of an apple or pear be exposed to light, even in the most diffused state, evaporation takes place; but as soon as the stimulus of light is withdrawn, evaporation ceases. Speaking of plants in general, evaporation from the green parts takes place all day long and ceases at night.

The preceding observations will explain the reason why a fruit-room is best in a dry situation, on the north side of a wall or other building where the sun's heat will not readily disturb the temperature. The roof should be double, and the walls hollow; the windows small. There should be a full command of ventilation; but the room should also be capable of being entirely shut up.

Evaporation should be used only when the air, owing to the exhalations from the fruit, is not perfectly sweet; when this is not the case, air must be admitted in whatever condition it may happen to be; but it would be most desirable to admit air copiously only when it is of an equal temperature with that of the interior of the room. The latter should be in two or three compartments, in order to keep the late sorts entirely free from the contaminating effects of exhalations of fruit in a fully ripe state.

These being the conditions under which the ripening, decay, and preservation of apples and pears always take place, the reader will have no difficulty in judging of the relative advantages of the 18 methods already named. It is obvious that Nos. 1, 2, 3, 4, 5, 6, 7, are plans in which the circumstances essential to the preservation of fruit are nearly completely complied with. Nos. 8, 11, 14, 15, and 16, are bad, either because of the liability of the material in which they are packed to decomposition, by which the fruit acquires a tainted musty taste, or because they can only be applied on a very small scale. Nos. 9 and 12 are chiefly objectionable because, owing to the almost entire absence of evaporation, the fruit, although well preserved and plump, is apt to be watery and tasteless. No. 17 is a troublesome and dirty practice; Nos. 13 and 18 are excellent when opportunity occurs of practising them; but No. 10, in dark but airy vaults, is undoubtedly that which most completely complies with the conditions necessary for preservation, and is much the best. We have known apples, that are usually decayed in February, preserved till Midsummer in this manner, in all their freshness and colour, and nearly all their flavour.

With regard to nuts and walnuts, the only precaution that it is necessary to take for their preservation is to maintain the air in which they are placed in a constant state of moisture. Burying in the earth, placing in a damp cellar, mixing with damp sand, and many such plans have been recommended; but they are all objectionable, either because they keep the fruit too moist, or do not offer any impediment to its becoming mouldy. We believe the best of all plans is to pack them in glazed earthen jars, throwing a small quantity of salt on the last layer before the jar is closed.

Apples and pears dried in ovens may be preserved for years. Bose states that he has tried the latter, after three years' preservation, and found them still good; but they are best during the first year. They are placed in the oven after the bread is drawn. The process is repeated a second, third, or fourth time, according as the size or nature of the fruit may require. The heat must not be so great as to scorch, nor must the fruit be dried to hardness. When properly done, they are kept in a dry place. Another method, chiefly practised on the rousselets, and of these the rousselet de Rheims is the best for the purpose, is to gather the fruit a little before maturity; after being half boiled in a small quantity of water, they are peeled and drained. They are then placed in the oven, and heated to a suitable degree, for twelve hours. They are then steeped in syrup, to which have been added brandy, cinnamon, and cloves. They are again returned to the oven, which is heated to a less degree than at first: this operation is then repeated.

The flattened dried apples, called beaufrins, so abundant in the London shops, are prepared in Norfolk, from a variety of apple called the Norfolk beaufrin: it has a thick skin, which resists, without bursting, the heavy pressure to which the apples are subjected in the oven, during the slow and lengthened process of drying.

FROTMU/NTIUS. [Abyssinian Christians; Axum.]
FRUSTUM, a portion cut off from any solid figure. The term is most frequently applied in the case of the cone, and conoidal surfaces of revolution. By 'frustum of a cone' is meant any part cut off from a cone which does not contain the vertex. This distinction is drawn because any part of a cone which contains the vertex is another cone.
FUCINUS. [Ceylon.]
FUCOS. [Sea Weed.]
FUEGO. [Mozambique.]

END OF VOLUME THE TENTH.